NACIP CONFIRMATION STUDY

AND SUMMARY OF REMEDIAL ACTION

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT

McGREGOR, TEXAS

AUGUST 1983

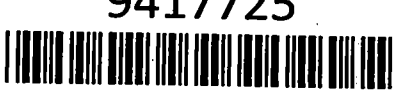
ENVIRONMENTAL BRANCH

UTILITIES DIVISION

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND

CHARLESTON, SOUTH CAROLINA



ACKNOWLEDGEMENTS

(In Alphabetical Order)

EPA	Stan Hitt, Region VI Kevin Pledger, EPA Photo Interpretation Center
Hercules	Kathleen Anglin George Cobb Harley Kamm D. R. Dietrich J. W. Hilliard
NEESA	Jeff Heath
TDWR	Rod Kimbro Mike Dick
U.S. Army	LT John Dahlke

REFERENCES

Initial Assessment Study, NWIRP McGregor, TX
March 1983
Prepared by: Envirodyne Engineers
(Contract N62474-81-C-9385/NEESA)

Ground Water Quality Assessment Area F
NWIRP McGregor, TX
Prepared: Shannon & Wilson
(Contract N52467-81-C-0992)

TABLE OF CONTENTS

		Page
I.	INTRODUCTION	1
II.	EXECUTIVE SUMMARY	1
	A. Site 2 - West Ponds in Area F	1
	B. Site 3 - Stock Pond North of Area F	1
	C. Site 5 - Pesticide Dump in Area G	5
	D. Site 6 - Asbestos Dump in Area L	5
	E. Site 9 - Stock Pond North of Area M	5
	F. Site 7 - WW II Washout Pits and Leaching Trenches (J,K &L)	5
	G. Site 12 - WW II Washout Pits and Leaching Trenches (Area M)	5
III.	SIGNIFICANT FINDINGS	5
	A. Site 2 - West Ponds in Area F	6
	B. Site 3 - Stock Pond North of Area F	6
	C. Site 5 - Pesticide Dump in Area G	6
	D. Site 6 - Asbestos Dump in Area L	12
	E. Site 9 - Stock Pond North of Area M	12
	F. Site 7 - WW II Washout Pits and Leaching Trenches in Areas J, K, L	12
	G. Site 12 - WW II Washout Pits and Leaching Trenches in Area M	12
IV.	REMEDIAL ACTIONS	12
	A. Site 2 - West Ponds in Area F	17
	B. Site 5 - Pesticide Dump in Area G	17
	C. Site 6 - Asbestos Dump in Area L	17

APPENDICES

Appendix A - Water and Sediment Analysis of Stock Pond North of Area F (Site 3)

Appendix B - Soil Analysis for Pesticide Dump Site in Area G (Site 5)

Part I - April 1979 SOUTHNAVFACENGCOM Survey	1
Part II - September 1982 SOUTHNAVFACENGCOM Survey	9
Part III - June 1983 SOUTHNAVFACENGCOM Survey	13

Appendix C - Water Analysis From Stock Pond North of Area M (Site 9)

Appendix D - WW II Aerial Photographs of Areas J, K, L and 1952 Photos of Area J (Site 7)

Appendix E - West Settling Ponds Area F - Final Closure Plan (Site 2)

Appendix F - Texas Department of Water Resources - Correspondence Concerning the Cleanup of the Pesticide and Asbestos Dump Sites (Sites 5 and 6)

TABLE 1

Site Number	Site Name	Further Action Recommended	CSRS[1] Score	No. Wells	No. Soil/ Sediment Samples	No. water Samples	Lab Testing/ Parameters	Remarks
001	Area F--East Settling Ponds	No	-	-	-	-	-	Tetryl, if present, would be detectedin monitoring at Site 002
002	Area F--West Settling Ponds	Yes	15	6	2	8	-	Tetryl, toluene, chlorinated benzenes, TATB, volatile organic analysis, DDT
003	Area F--Stock Pond	Yes	15	-	3	1	-	Analyze for toluene, chlorinated benzenes, TATB, DDT
004	Area E--Dump	No	-	-	-	-	-	
005	Area G--Pesticide Dump	Yes	20	-	126	2	-	Analyze for DDT. Mow area and take aerial photos to find all contaminated areas If soil samples show that DDT is migrating, monitoring wells maybe necessary.
006	Area L--Asbestos Pile	Yes	18	-	-	3	-	Analyze for asbestos. Cover asbestos pile and reroute draining away to prevent erosion of the pile.
007	Area L--TNT Washout Pits	Yes	11	-	-	-	-	Obtain aerial photos from WW II and analyze to see if any washout pits are present. If present, sample the soil and analyze for TNT. (SOUTHDIV has photos)
008	Area M--Interior Settling Basins	No	-	-	-	-	-	
009	Area M--North Pond	Yes	18	-	-	1	-	Analyze for hexavalent chromium and trichloroethylene.
010	Area M--Propellent Washout Pond	No	-	-	-	-	-	
011	Area M--Imhoff Tank and	No	-	-	-	-	-	
012	Area M--TNT Washout Pits	Yes	11	-	-	-	-	Obtain aerial photos from WW II and analyze to see if any washout pits are present. If present, sample the soil and analyze for TNT. (SOUTHDIV has photos)
013	Area S--Burning Grounds	No	-	-	-	-	-	
014	Area S--Landfill	No	-	-	-	-	-	

(1) Sites considered innocuous are eliminated by the Confirmation Study Ranking System (CSRS) and do not receive a score. No further action is needed at those sites.

I. INTRODUCTION

In March 1983, the final Initial Assessment Study (IAS) for the NWIRP McGregor, TX, prepared by Envirodyne Engineers, was published. A location map for NWIRP McGregor is shown on Figure 1. The recommendations from the IAS are summarized in Table I. All the recommended actions have been accomplished, and it is the purpose of this report to discuss the findings and identify the remedial actions required.

The SOUTHNAVFACENGCOM Confirmation Study (CS) was initiated in August 1982, and an on-site visit and survey at NWIRP McGregor was conducted during the week of 20-24 September 1982. The Shannon & Wilson Ground Water Quality Assessment of Area F (Site 2) was initiated in October 1981. Although information relative to the investigation of Site 2 is provided in this report, the ponds are not abandoned hazardous waste disposal areas. Instead, Site 2 constitutes an operating treatment area regulated under the Resource Conservation and Recovery Act (RCRA) and, therefore, is not classified as a Superfund or Navy Assessment and Control of Installation Pollutants (NACIP) site.

II. EXECUTIVE SUMMARY

The IAS identified seven sites as requiring a Confirmation Study (CS). Contamination significant enough to warrant cleanup has been identified at three of the sites. Projects to clean up these contaminated sites are either in process or will soon be initiated. The sites are identified by number on Figure 2.

A. Site 2 - West Ponds in Area F

This is an operationally oriented site requiring corrective action under RCRA. Use of the settling ponds has been terminated and contaminated material has been removed. This site is the subject of a detailed Ground Water Quality Assessment for Area F prepared by Shannon & Wilson, Inc. No significant ground water contamination was discovered in the vicinity of this site.

B. Site 3 - Stock Pond North of Area F

The pond water and sediment have been sampled and no significant contamination found. With discontinuation of use of the west settling ponds and cleanup of the pesticide contamination in Area G, the stock pond may continue to be used for cattle watering.

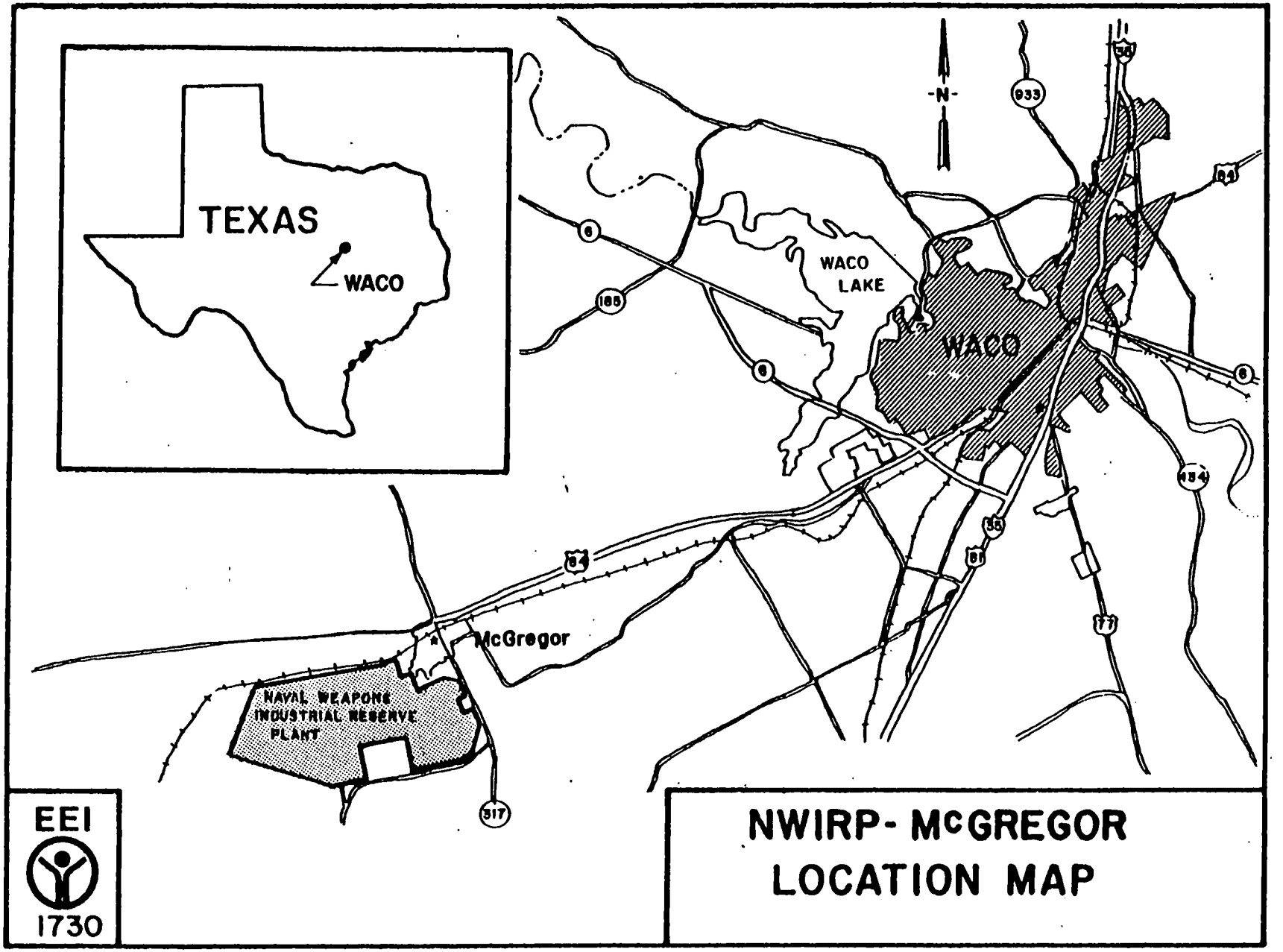
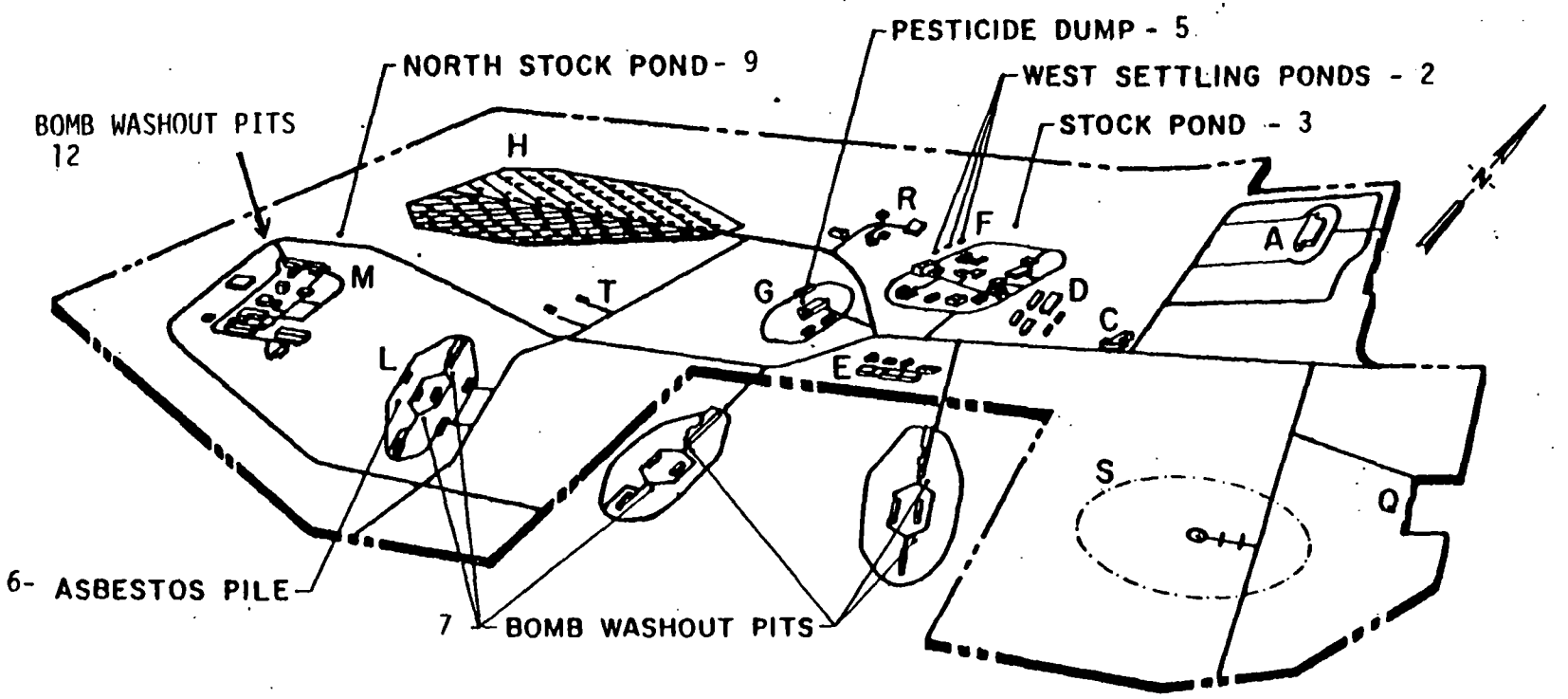

TEXAS
WACO
-N-
WACO LAKE
WACO
McGregor
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
EEI
1730
NWIRP- McGREGOR
LOCATION MAP

FIGURE 1



EEI
1730

NWIRP - McGREGOR
POTENTIAL CONTAMINATION SITES

FIGURE 2

C. Site 5 - Pesticide Dump in Area G

Approximately 1500 - 3000 cubic feet of concentrated pesticides and 2500 cubic yards of low level pesticide contaminated earth has been identified in the eastern portion of Area G. A construction project to remove and dispose of the pesticides off site is being developed. The area will be covered with clean topsoil and seeded to native grasses and returned to its original character.

D. Site 6 - Asbestos Dump in Area L

As recommended in the IAS, this site will be buried under approximately 6,000 cubic yards of earth and drainage in the area rerouted to prevent future erosion. This location will be identified in the Base Master Development Plan and approprite signs placed to insure that it remains undisturbed. Compared to containerizing and disposing of the asbestos elsewhere, which would only greatly aggravate the potential for serious contamination via airborne dispersion of the disturbed asbestos, covering the site is a much safer approach to solving the problem.

E. Site 9 - Stock Pond North of Area M

.68 ppm Cr found was

The stock pond water was analyzed for hexavalent chromium and trichloroethylene and no contaminaton found. Therefore, no corrective action is necessary.

F. Site 7 - WW II Washout Pits and Leaching Trenches (Areas J, K, and L)

An analysis of 1943 - 1944 aerial photographs of the NWIRP McGregor gave no indication as to the existence or location of washout pits and leaching trenches in areas J, K, and L. A survey of users and wells in these areas gave no indication of any residual water contamination from TNT. Therefore, no corrective action is necessary.

G. Site 12 - WW II Washout Pits and Leaching Trenches (Area M)

An analysis of 1943 - 1944 aerial photographs of the NWIRP McGreogr gave no indication as to the existence or location of washout pits and leaching trenches in area M. A survey of users and wells in this area gave no indication of any residual water contamination from TNT. Therefore, no corrective action is necessary.

III. SIGNIFICANT FINDINGS

Reference should be made to the IAS and Shannon & Wilson study for detailed background information on each of the sites in Table I covered by this Confirmation Study. The Confirmation Study findings for each of the sites are discussed in detail in this section.

A. Site 2 - West Ponds in Area F

For a detailed discussion of the ground water contamination analysis associated with the operation of the West Settling Ponds in Area F, reference should be made to the Shannon & Wilson Study. As a continuously operating site until closure, this site should never have been classified as a NACIP abandoned hazardous waste disposal area. Management and cleanup of this site has been under RCRA. Corrective action has been initiated.

B. Site 3 - Stock Pond North of Area F

As recommended in the IAS, sediment and water samples were analyzed for the contaminants listed in Table I. Results of the laboratory analysis are contained in Appendix A. No significant contamination was found for any of the pollutants identified. The stock pond is a safe source of drinking water for cattle and no remedial action is necessary.

C. Site 5 - Pesticide Dump in Area G

As early as April 1979, personnel from SOUTHNAVFACENGCOM identified and reported on significant pesticide contamination in a former dump site within Area G (see Figure 3). The substance of the results of an on site survey conducted at that time, contained in Appendix B, supplement the IAS discussion of this site.

In September of 1982, per the recommendations in the IAS, the tall, native grasses in the contaminated area were mowed and burned. During the week of 20-24 September, the Army provided helicopter support for taking aerial photographs. Two representative photographs taken by NWIRP McGregor photography personnel are provided herein as Photograph 1 and Photograph 2. Photographs 3 and 4, not available during the IAS, are also included for historical reference purposes. The latter two photographs were taken in the 1951-52 timeframe just prior to or shortly after close out of the pesticide processing operations. Like the 1982 photograhs, they show a long linear strip of pesticide dumping between the roadway and fence line (the burned off area in the 1982 photographs).

Appendix B, Part II, contains the detailed information on the 1982 soil sampling in Area G. It shows that in those locations within the contaminated area where via visual inspection there would appear to be a high concentration of pesticide contamination (designated as hot), laboratory analysis verified the assumption. At the hot sites, the contamination does not occur below 12 inches. This would be expected given the insolubility and high soil affinity of the subject pesticides. In those locations within the contaminated area that by visual inspection would appear to be relatively uncontaminated (cold), laboratory analysis also verifies this assumption. Appendix B, Part III, contains detailed information on subsequent soil sampling in Area G, conducted on June 22, 1983.

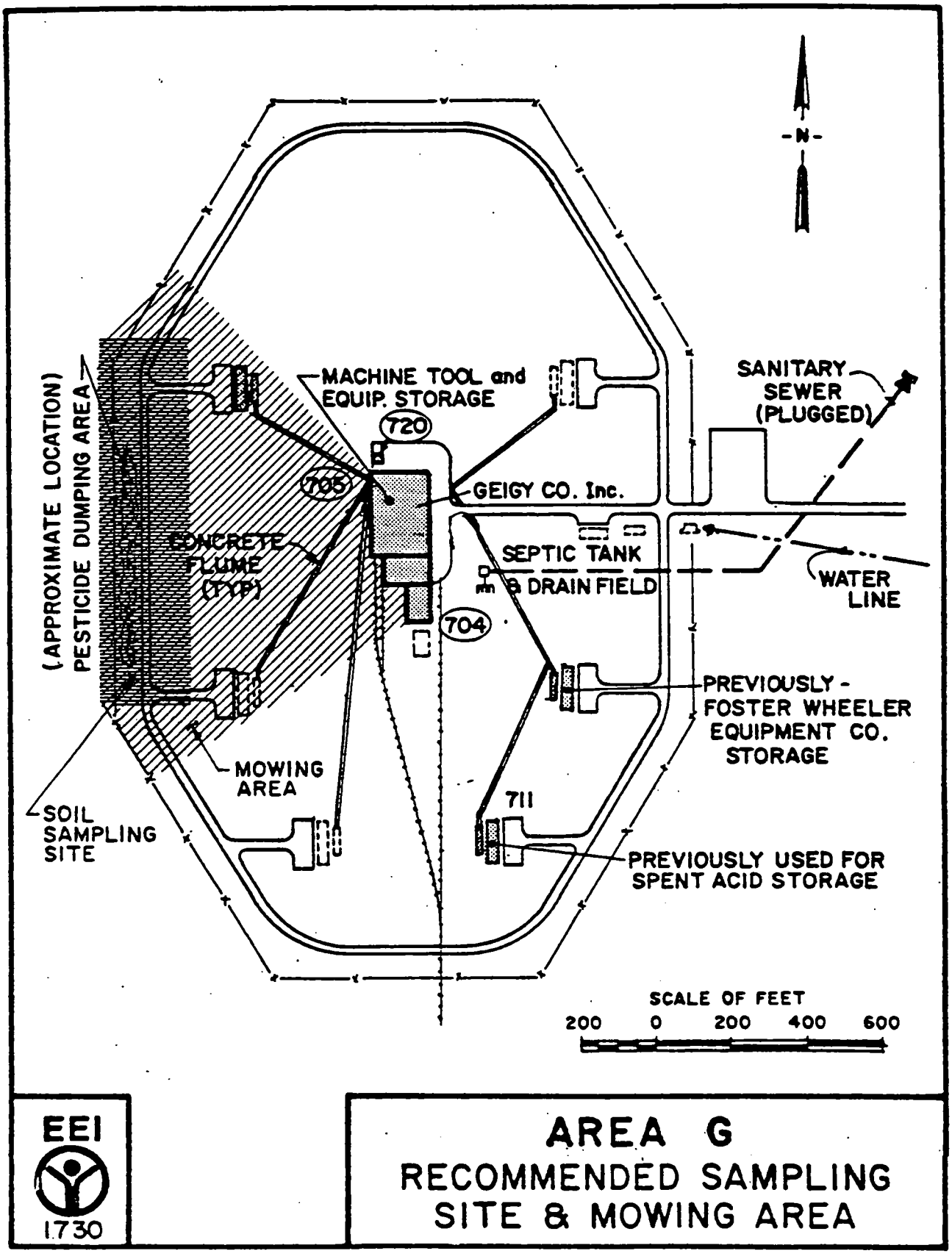
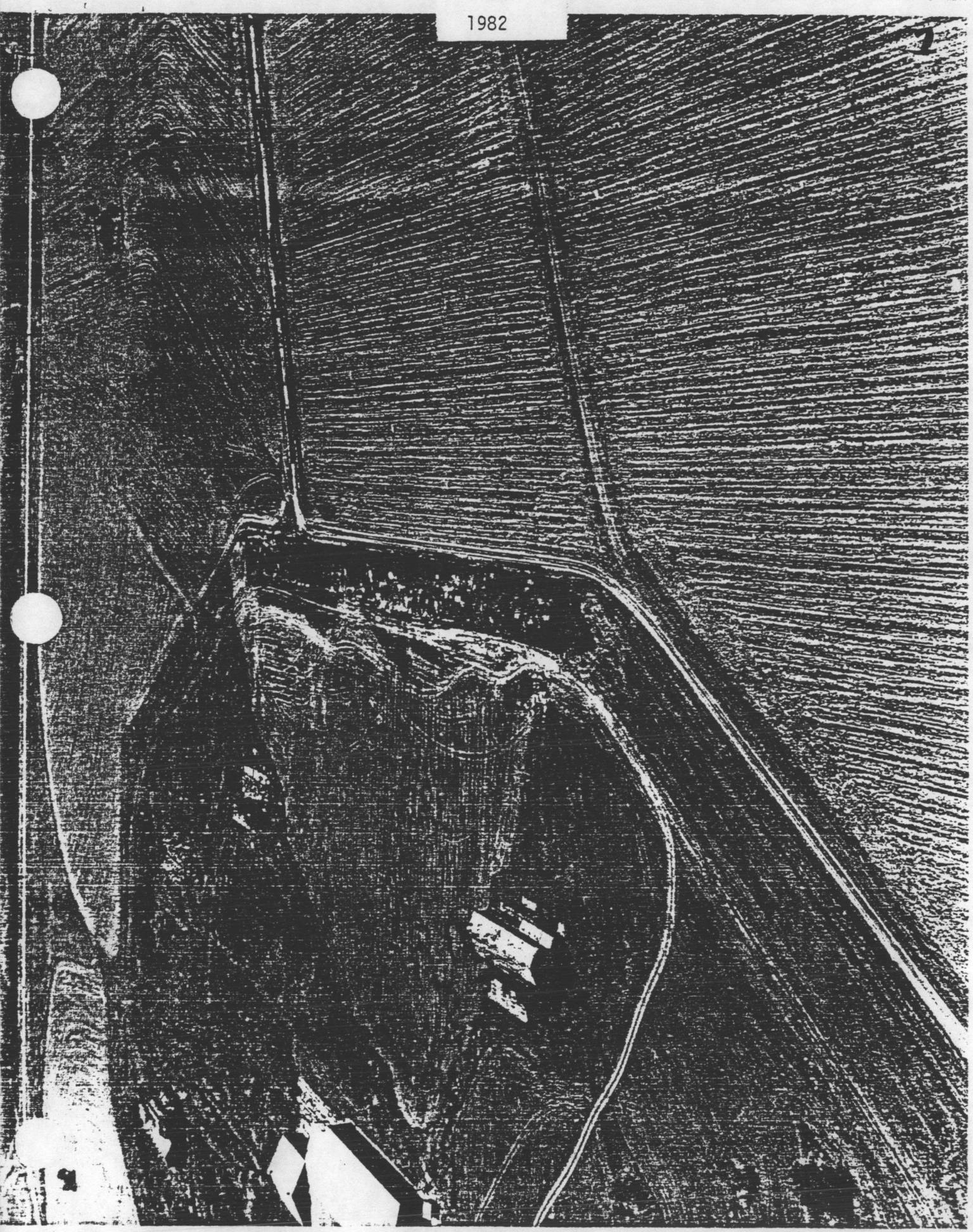
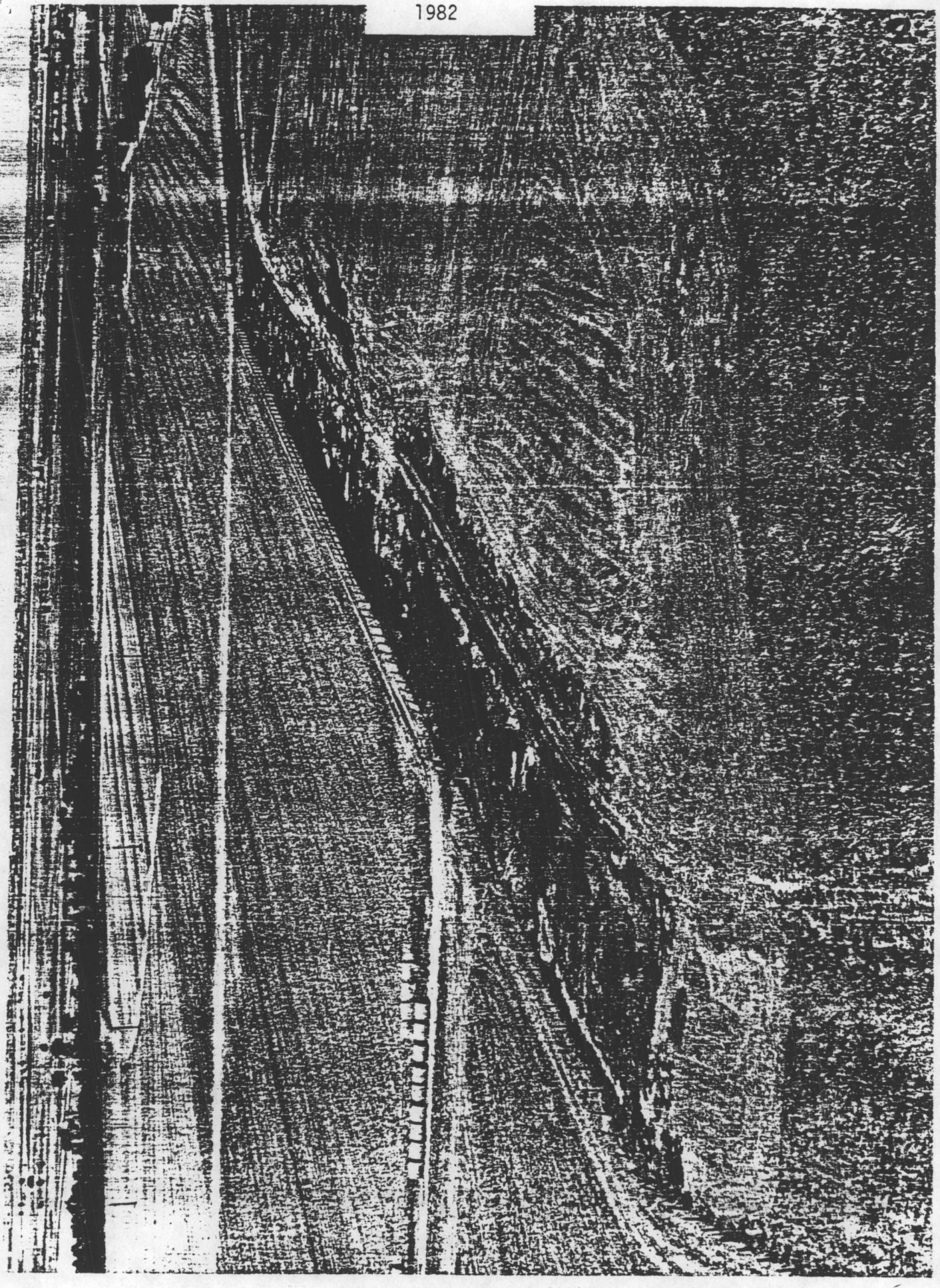

-N-
(APPROXIMATE LOCATION)
PESTICIDE DUMPING AREA
MACHINE TOOL and
EQUIP. STORAGE
720
705
GEIGY CO. Inc.
SANITARY
SEWER
(PLUGGED)
CONCRETE
FLUME
(TYP)
SEPTIC TANK
& DRAIN FIELD
WATER
LINE
704
PREVIOUSLY -
FOSTER WHEELER
EQUIPMENT CO.
STORAGE
MOWING
AREA
711
SOIL
SAMPLING
SITE
PREVIOUSLY USED FOR
SPENT ACID STORAGE
SCALE OF FEET
200 0 200 400 600
EEI
1730
AREA G
RECOMMENDED SAMPLING
SITE & MOWING AREA

FIGURE 3

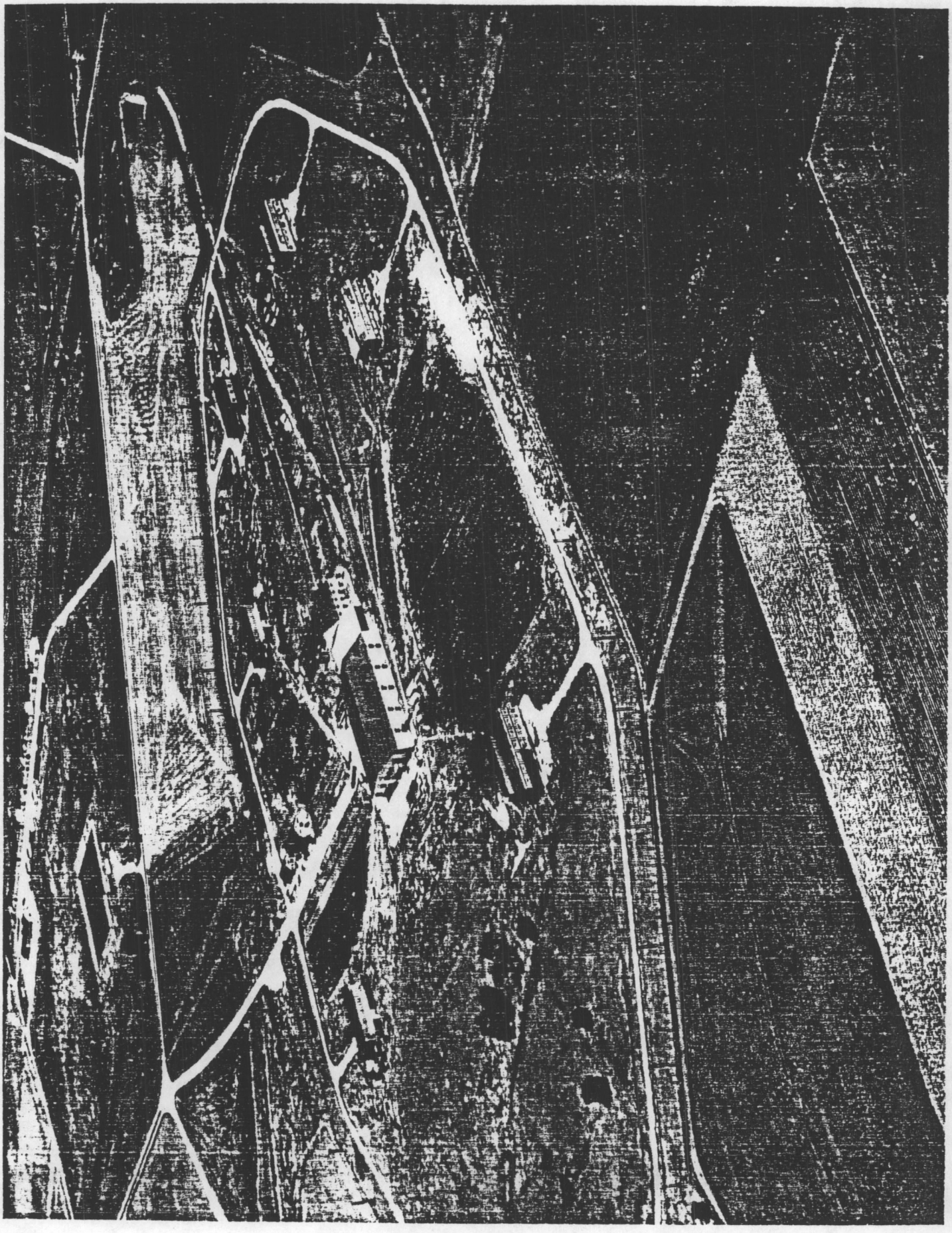


8 PHOTOGRAPH 1 PESTICIDE DUMP (SITE 5)



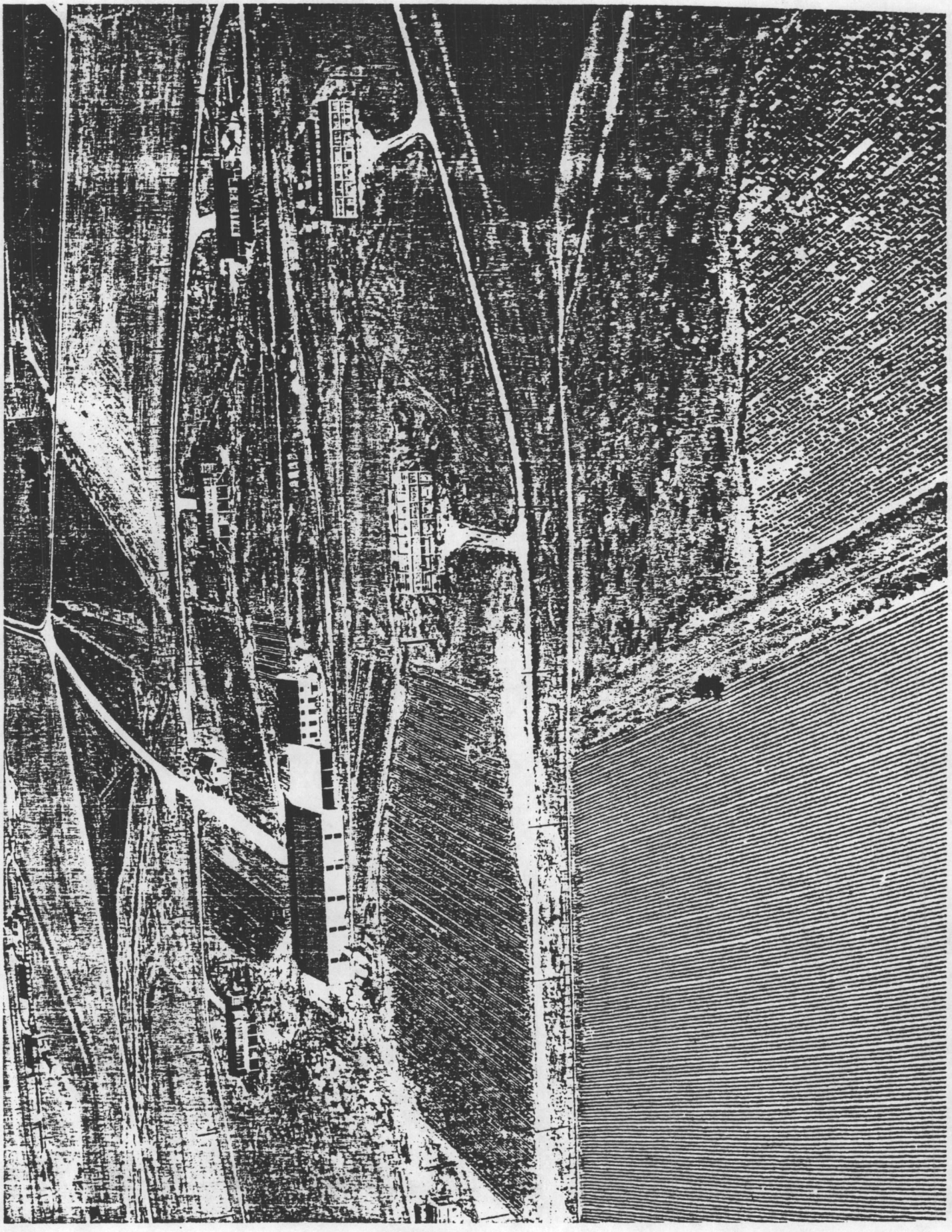
9 PHOTOGRAPH 2 PESTICIDE DUMP (SITE 5)

1952



PHOTOGRAPH 3 PESTICIDE DUMP (SITE 5)

1952



PHOTOGRAPH 4 PESTICIDE DUMP (SITE 5)

In summary, and as verfieid by laboratory analysis, and most clearly seen by looking at the photographs, pesticide contamination occurs primarily in small patches throughout the cross hatched area shown in Figure 4. The levels of contamination outside the concentrated pesticide patches are very low or nonexistent.

D. Site 6 - Asbestos Dump in Area L

Photographs 5 and 6 clearly define the extent of the asbestos dump site in Area L in 1952-53 and 1982 respectively. The site with elevation contours is also shown in Figure 5. Although the crust which has formed over the top of the asbestos and vegetation throughout the site have minimized erosion and any airborne asbestos dispersion, remedial action is required to insure that the site be permanently secured.

E. Site 9 - Stock Pond North of Area M

An analysis of water samples taken in 1981 (see Appendix C) from this stock pond indicates levels below the safe drinking water standards. The pond can therefore be considered safe for cattle drinking.

F. Site 7 - WW II Washout Pits and Leaching Trenches in Areas J, K, L

The EPA Environmental Photographic Interpretation Center was contacted for assistance in locating aerial photographs of Areas J, K, and L during WW II bomb manufacturing operations. Appendix D contains these photographs, taken in the 1943 - 44 timeframe.

A detailed analysis of these photographs and as built drawings of Areas J, K and L prepared in February 1945 indicate the use of concrete lined settling basins and no leaching trenches. An analysis of early 1950 aerial photograhs of these areas, also contained in Appendix D, also give no indication as to the existence of leaching trenches.

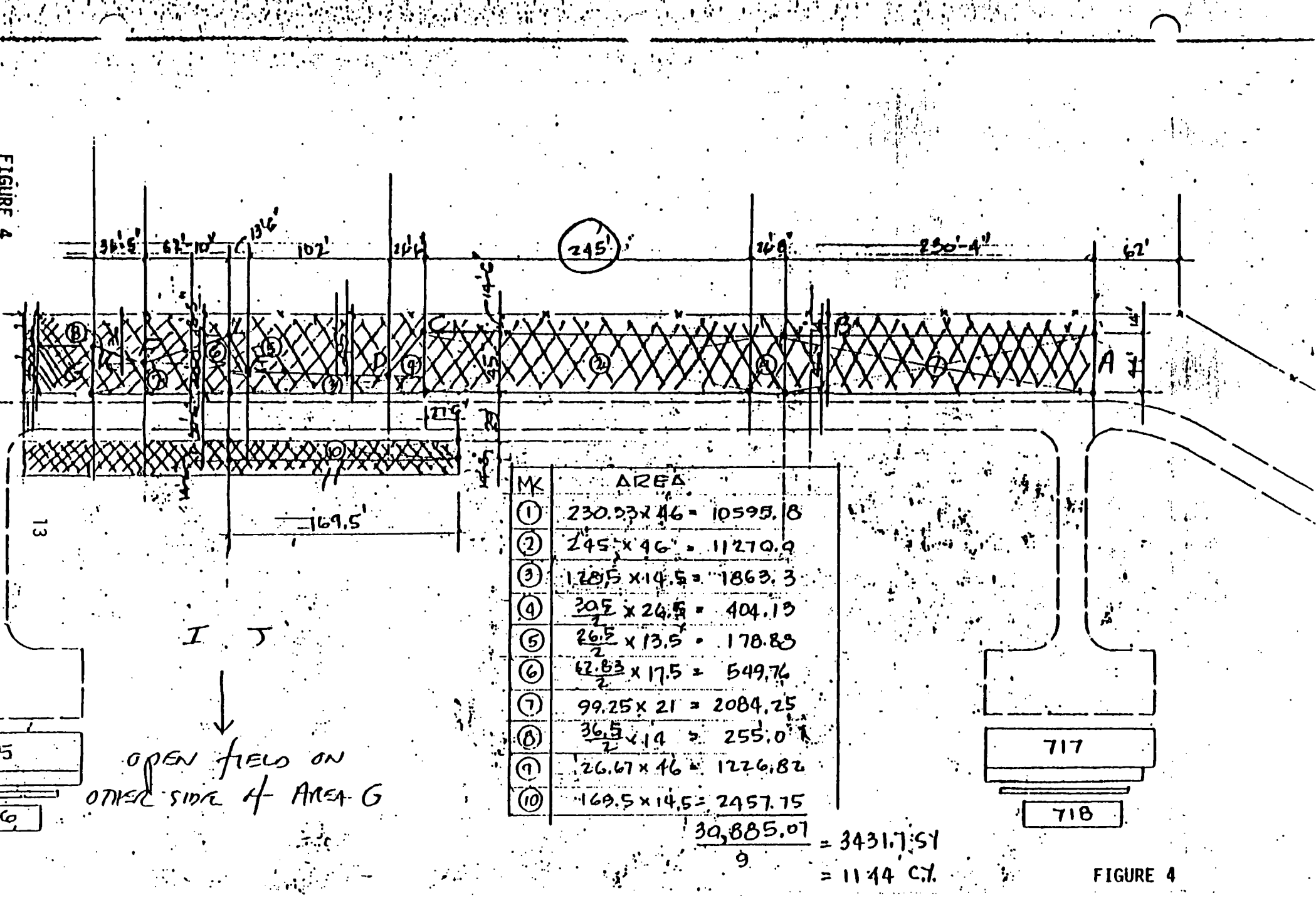
Since there is no documented evidence indicating the use and location of leaching trenches, it is assumed that no ground water pollution could have resulted from bomb manufacturing operations in Areas J, K, and L.

G. Site 12 - WW II Washout Pits and Leaching Trenches in Area M

As was the case with Site 7, there is no historical or visible evidence as to the existence or location of washout pits and leaching trenches in Area M.

IV. REMEDIAL ACTIONS

Remedial action is recommended for three of these sites.



MK	AREA
①	230.33 x 46 = 10595.18
②	245 x 46 = 11270.9
③	128.5 x 14.5 = 1863.3
④	$\frac{20.5}{2}$ x 26.5 = 404.13
⑤	$\frac{26.5}{2}$ x 13.5 = 178.88
⑥	$\frac{62.83}{2}$ x 17.5 = 549.76
⑦	99.25 x 21 = 2084.25
⑧	$\frac{36.5}{2}$ x 14 = 255.01
⑨	26.67 x 46 = 1226.82
⑩	169.5 x 14.5 = 2457.75

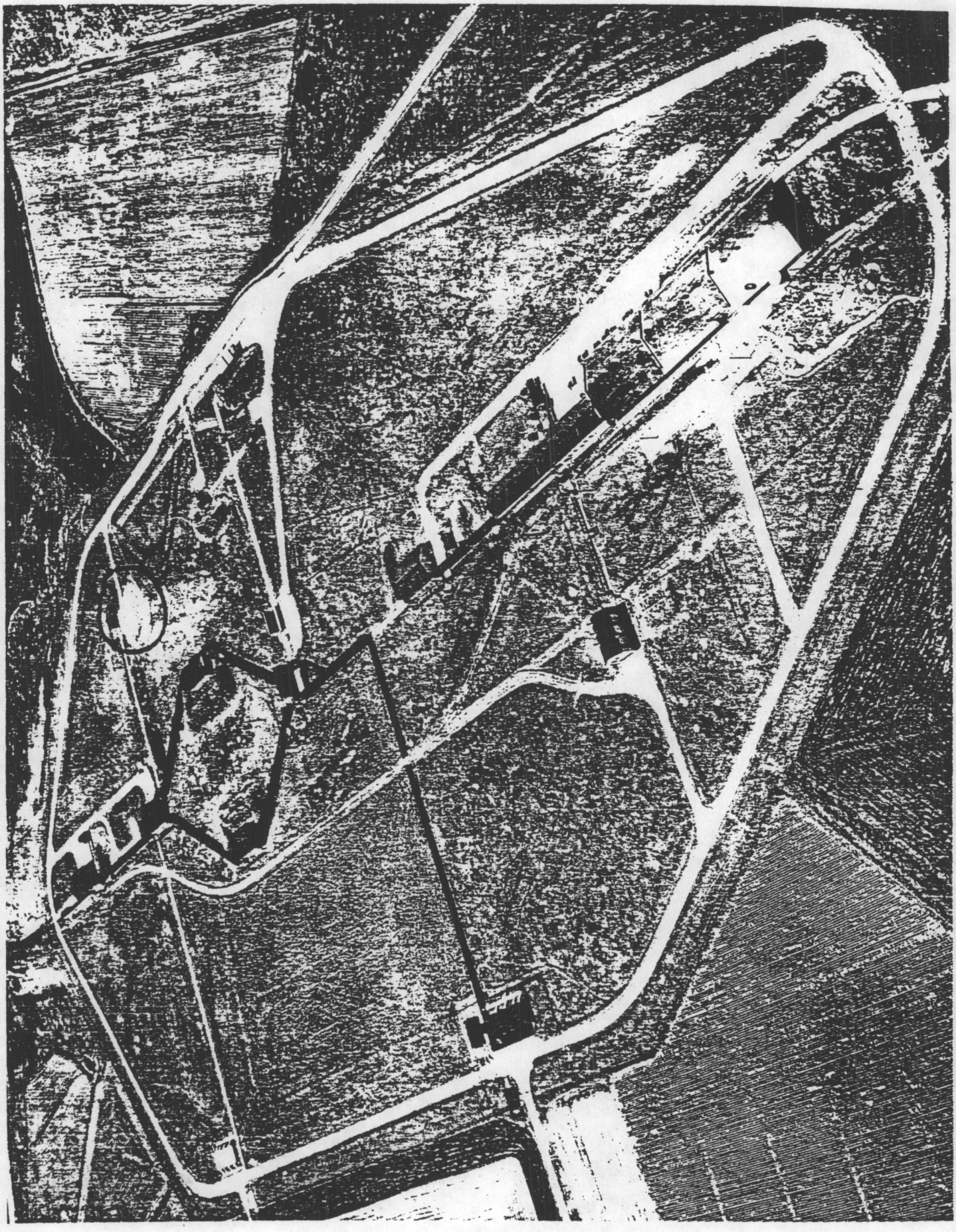
$\frac{30,885.01}{9}$ = 3431.7 SY

= 1144 C.Y.

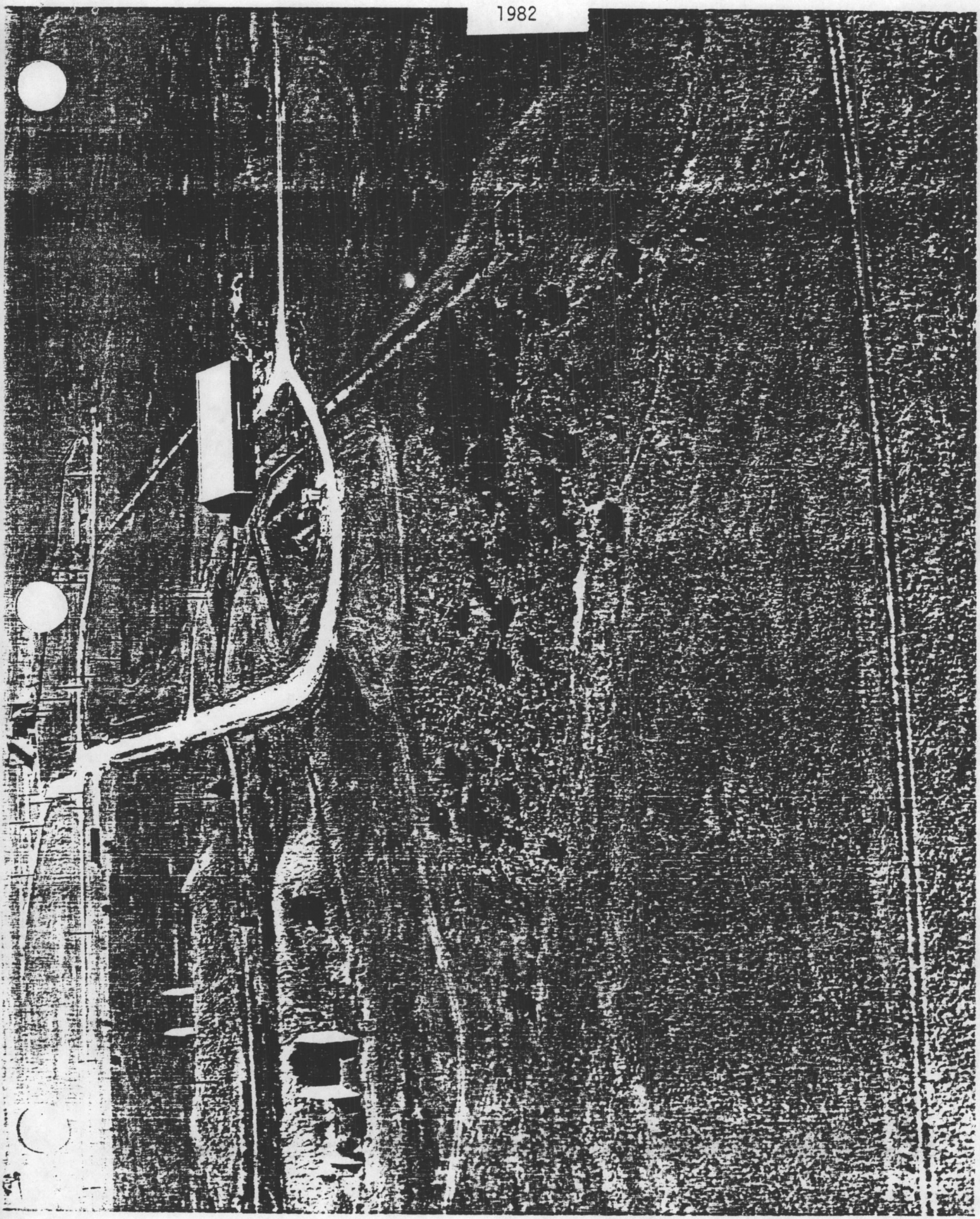
FIGURE 4

FIGURE 4

1952



PHOTOGRAPH 5 ASBESTOS DUMP (SITE 6)



PHOTOGRAPH 6 ASBESTOS DUMP (SITE 6)

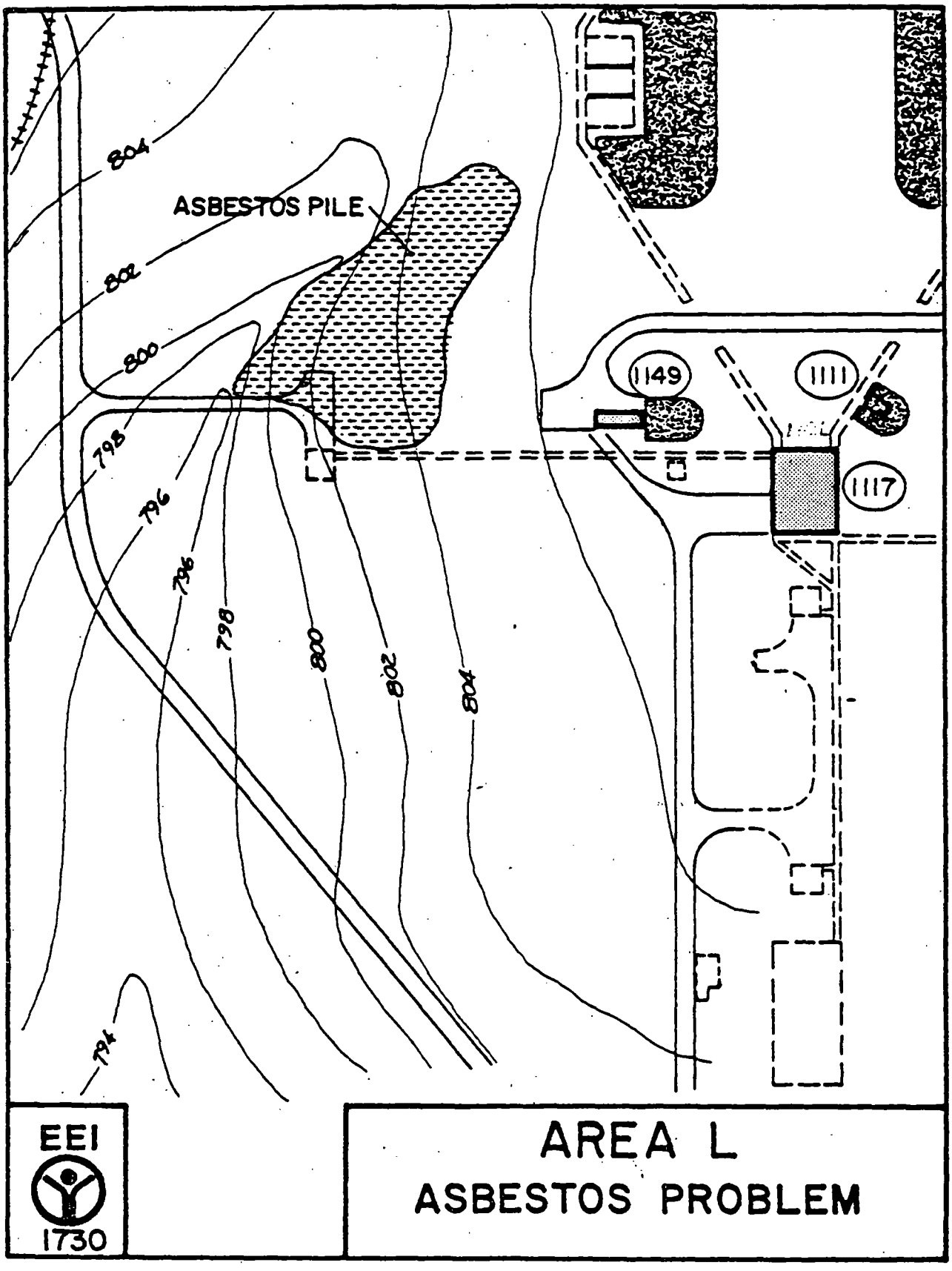

804
ASBESTOS PILE
802
800
798
796
796
798
800
802
804
794
1149
1111
1117
EEI
1730
AREA L
ASBESTOS PROBLEM

FIGURE 5

A. Site 2 - West Ponds in Area F

This site has been closed and is in the process of being cleaned up. The finalized closure plan is provided as Appendix E. Corrective action has been handled under RCRA and not as a NACIP cleanup project.

B. Site 5 - Pesticide Dump in Area G

The Texas Department of Water Resources requires cleanup of all pesticides to residual levels below 1 ppm (please refer to correspondence in Appendix F). In order to achieve this level of compliance, it is recommended that the entire cross hatchedarea in Figure 4 be removed to a depth of 12". This is a total volume of approximately 2500 cubic yards. The concentrated pesticides and contaminated soil must be removed to and disposed of at a landfill approved by the State of Texas. Documentation that all of the material removed has been properly disposed of will be required. Post cleanup sampling will be required to confirm that residual pesticide concentrations are below 1 ppm.

It is recommended that this work be accomplished by a firm experienced in the handling and disposal of hazardous materials. On site removal shall be accomplished so as to minimize dispersion of the pesticides and to maximize the health and safety of those involved in cleanup activities.

C. Site 6 - Asbestos Dump in Area L

Remedial action at the asbestos dump site involves covering the asbestos with a minimum of 2' of compacted topsoil, rerouting the drainage in the area to preclude erosion and placing signs in the area warning persons not to disturb the site. The presence of the site should also be integrated into the activity master development planning process.

The material being covered is pure friable asbestos. Disturbance of the asbestos must be minimized at all times. A crust formed over the top of the asbestos dump site has effectively eliminated the possibility of airborne asbestos in the area. However, when this crust is disturbed (walking, shoveling, equipment transit, etc.) the asbestos becomes airborne. Therefore, during any activities that break the crust and lead to the possible airborne dispersal of asbestos fibers, a water spray must be applied to the disturbed area so as to preclude dispersion. Covering of the asbestos site shall proceed from the periphery inward so that equipment and workers will be supported by and directly contact fill material and not asbestos.

The State of Texas concurs in this corrective action as discussed in their correspondence contained in Appendix F.

Prepared by:

RICHARD BOZUNG

Reviewed by:

J. L. McCAULEY, P.E.

APPENDIX A

WATER AND SEDIMENT ANALYSIS OF

STOCK POND NORTH OF AREA F

(SITE 3)

NAVSO 5216/2 (REV. 11-67)
S/N 0104-004-1762 (REV. 11-67)

DEPARTMENT OF THE NAVY

Memorandum

DATE: 18 July 79

FROM : Code 114C

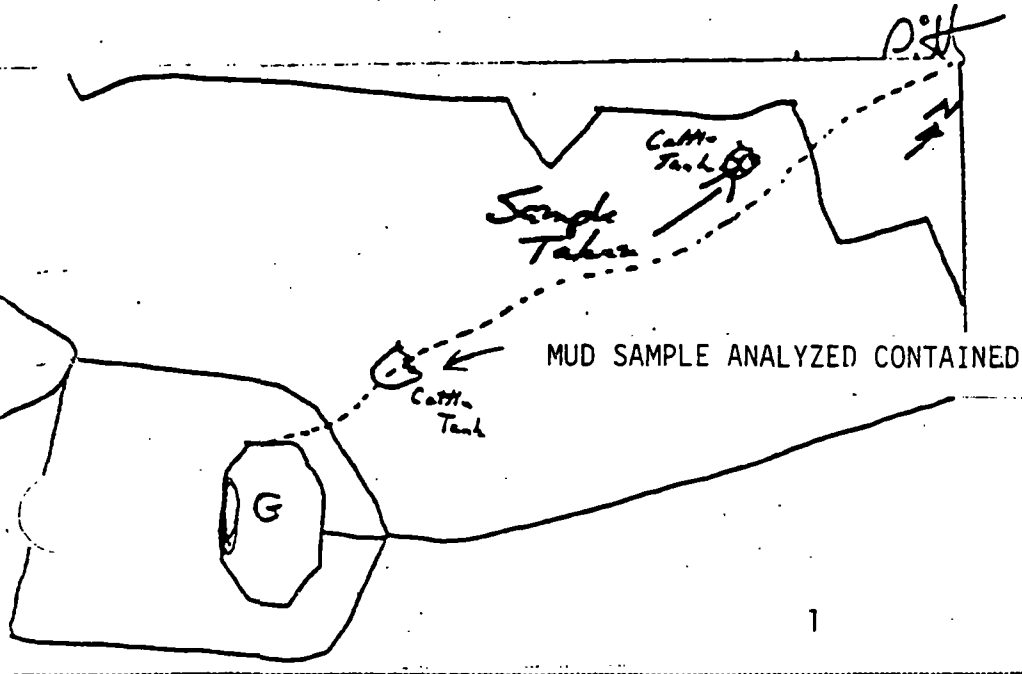
TO : Code 243

SUBJ : Soil Contamination at NWIRP McGregor, Tx

Ref : (a) Foncon btwn Mr. Ted Sullivan, OESO and Mr. L. Pitts, Code 114C on 18 Jul 79

1. During an Environmental Engineering Survey, Mr. Scott McAvoy, Code 114A, collected a sediment sample from the cattle tank located at the northern corner of the subject activity. The sample was sent to the Ordance Environmental Support Office (OESO) Indian Head, Maryland for determination of DDT concentrations.

2. The results of that analysis, received during reference (a), showed 3 parts per billion DDT. This extremely small amount can be ignored. It should not present a hazard to humans or livestock.



MUD SAMPLE ANALYZED CONTAINED 1.9 ppm DDT

cc: File

F discharge from ponds

RL-81-28
McGregor, Texas
April 28, 1981

To: G. V. Cobb

From: M. D. Oates MDO

Subject: Pond Water (4-20-81)

Pond water sampled on 4-20-81 was analyzed as follows for traces of toluene, TATB, and other compounds associated with the synthesis of TATB:

GC analysis of the pond water showed no trace of toluene or other such compounds.

The pond water contained 3% by weight of dissolved solids. These solids showed no trace of TATB when analyzed by IR. The residual solids were mainly comprised of inorganic chlorides.

The yellow color of the water can be removed by treatment with activated charcoal.

TCTNB - NO TRACE

F DISCHARGE FROM PONDS

ALLIED ANALYTICAL & RESEARCH LABORATORIES

3031 Glenfield
P.O. Box 24330
Dallas, Texas 75224

Chemists
Consultants & Technologists

214/337-8996

June 11, 1982

SAMPLE Effluent Discharge

DATE SUBMITTED 5/18/82

IDENTIFYING MARKS See Below

ANALYTICAL REPORT NO. 59301

SUBMITTED BY

Hastings Analytical Laboratory
Attn: J. W. Karban

ADDRESS P. O. Box 1910
Waco, Texas 76703

ANALYSIS

One (1) sample of water was submitted for identification of organics present by gas chromatography/mass spectrometry (GC/MS).

The water was extracted with pesticide grade methylene chloride at pH's 4.0 and 11.0. These extracts were concentrated by Kuderna-Danish techniques, then combined just prior to analysis on a Hewlett-Packard 5995 GC/MS System equipped with 30m SE-54 WCOT fused silica capillary column. The following compounds were identified.

ALLIED ANALYTICAL & RESEARCH LABORATORIES

Chemists

Consultants & Technologists

231 Glenfield
P.O. Box 24330
Dallas, Texas 75224

214/337-8996

June 11, 1982

SAMPLE Effluent Discharge

DATE SUBMITTED 5/18/82

IDENTIFYING MARKS See Below

ANALYTICAL REPORT NO. 59301

SUBMITTED BY

Hastings Analytical Lab.
Attn: J. W. Karban

ADDRESS P. O. Box 1910
Waco, Texas 76703

ANALYSIS

COMPOUND	Approximate concentration range
Xylol	1 - 50 ppb
Trichlorobenzene	1 - 50 ppb
Aliphatics (C_{15}-C_{21})	50 - 500 ppb
Diethyl Phthalate	1 - 50 ppb
Butyl Phthalate	1 - 50 ppb
PCB (Aroclor 1242 or 1254)	1 - 50 ppb
Halogenated Cmpds "A"	100 - 5000 ppb
Halogenated Cmpds "B"	100 - 5000 ppb

The compounds listed as "A" and "B" above appear to be halogenated aromatics with molecular weights of 270 and 305, respectivily. Mass spectra of these compounds are enclosed.

H. Morris Weller, President

ALLIED ANALYTICAL & RESEARCH LABORATORIES, BY

GENERAL ENGINEERING LABORATORIES

Full Service Chemical Testing and Analysis

Office & Lab.
1313 Ashley River Road
Charleston, S.C.
Phone (803) 556-8171

Mailing Address
P.O. Box 30712
Charleston, S.C. 29407

Analysis Sheet

Client	Southern Division Naval Facilities Engineering Command P.O. Box 10068 Charleston, SC 29411	Date	February 25, 1983
		P.O. No.	N00612-82-A-B178-316F
		Requested by	Mr. Laurens Pitts

Sample Identification — Results

Analysis of 7 oil samples and 1 soil sample, received in our laboratory on February 10 and 17, 1983, has been completed. The results are summarized below.

Parameter	Tank Car 1	Tank Car 2	Tank Car 3	Truck Rack	Rectifier	Regulator	Transformer Oil	Pond Mud
DDT, ppb								<5
PCB, ppm								
- 1016	--	--	--	--	--	--	--	
- 1210	--	--	--	--	--	--	--	
- 1221	--	--	--	--	--	--	--	
- 1232	--	--	--	--	--	--	--	
- 1242	--	--	--	--	--	--	--	
- 1248	15.7	52.6	1170	201	5.00	--	5.75	
- 1254	--	--	--	--	--	1.48	--	
- 1260	--	--	--	--	--	--	--	

STOCK POND NORTH of AREA F SEDIMENT SAMPLE

Respectfully submitted by

George C. Greene, P.E., Ph.D.

fc:nvfc0218.3

APPENDIX B

SOIL ANALYSIS FOR PESTICIDE DUMP SITE

IN AREA G

(SITE 5)

SOUTHNAVFACENGCOM SURVEY

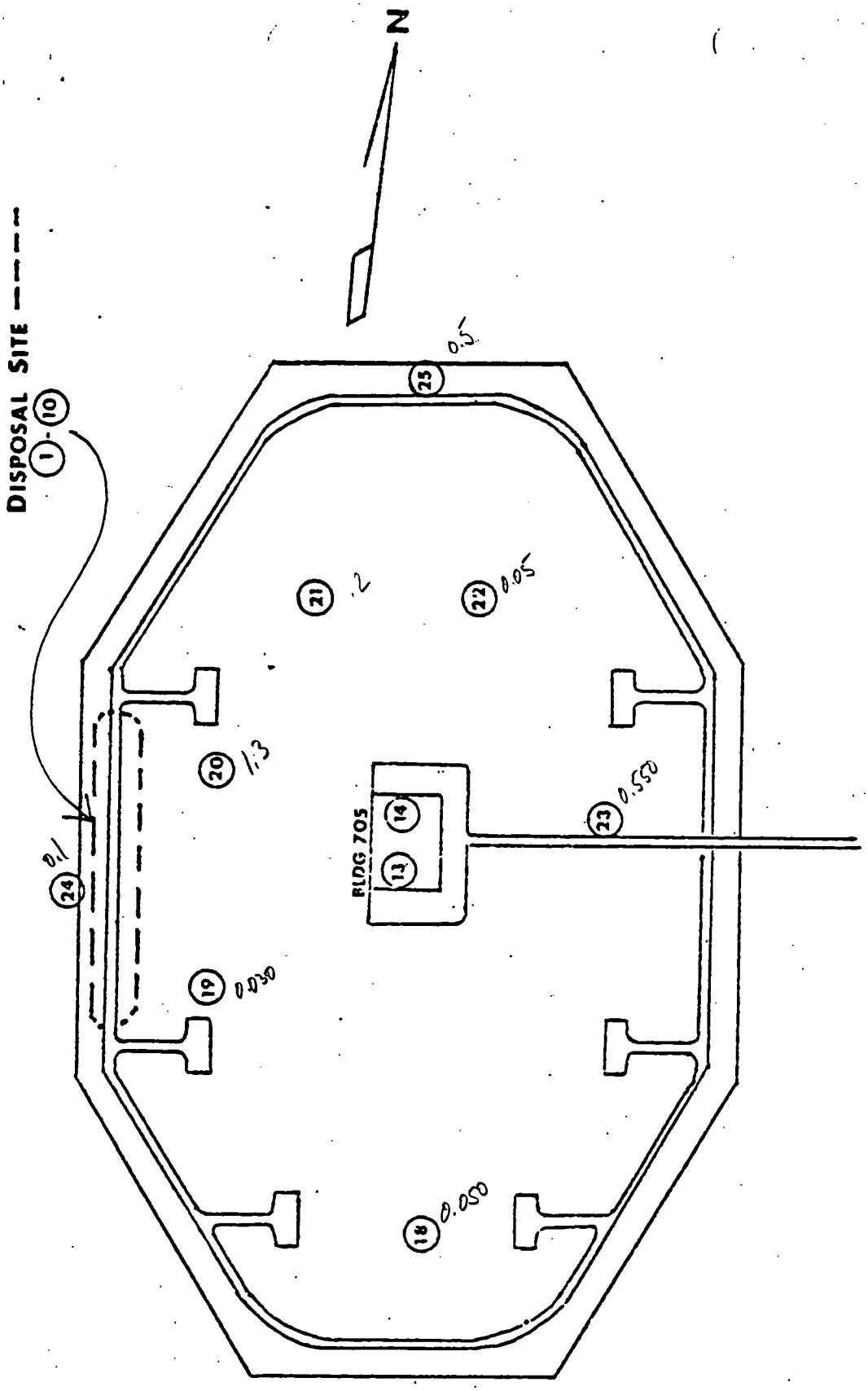
The G area is located approximately in the middle of the facility; being about two miles from the Town of McGregor to the northeast. This area, which includes building 705, apparently (no official records could be found) had been used by the Geigy Chemical Company after World War II as a pesticide formulation site. The wall areas of building 705 contained many stencil markings of different pesticide names. Inside the building itself there was a very strong odor originally thought to be pesticides; however, this was discounted after analysis of samples in the building showed no pesticides present. The area behind building 705 on either side of the G area perimeter road, was apparently used as a disposal site for the Geigy operations. The area, approximately 700 feet long and 300 feet wide, was grown up in grass approximately a foot high with sparse unvegetated areas containing broken laboratory type glasswares, barrels, (mostly rusted away) with pesticide markings and pesticide bags with labels indicating that DDT, toxaphene, aldrin-dieldrin, chlordane-heptachlor, BHC-lindane, and endrin had been present. This area also had a very distinct yet different odor from building 705. From the evidence examined it appears that the general Geigy operations consisted of shipping in technical grade (pure) pesticides probably in 55 gallon drums, and mixing with inert material and packaging in building 705.

The first day of the survey, 16 May 1978, consisted of a meeting with NWIRP personnel, a general tour of the facility, and collecting several (three) surface samples of suspect material from the G area disposal site, and three samples of soil and water from other areas of the facility.

The second day of the survey consisted of a thorough search and sampling of the G area including building 705. Seven samples were collected within the disposal area, two inside building 705, one from a cattle tank (drainage pond) approximately 3/4 mile from the disposal area, and one from an area outside the G area watershed.

The following list of 17 samples were analyzed by the Naval Ordnance Station, Indian Head, MD. (For locations see Figures 5 and 6):

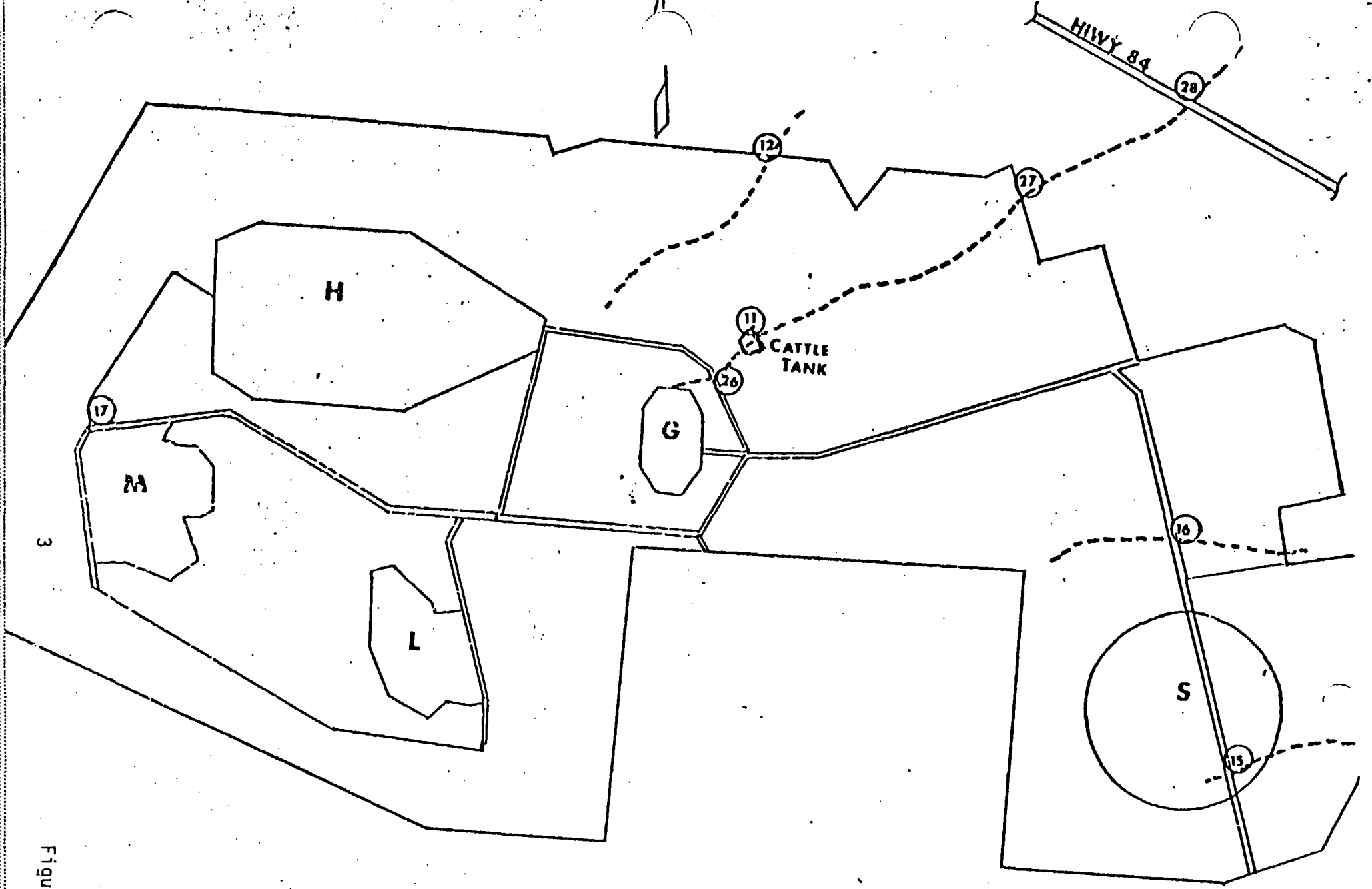
	Sample No.	Description	Date Collected
Toxaphene	1	G area - Surface material, brown in color with a resin texture	16 May
Sulfur	2	G area - Surface material, yellow in color with a solf-stone texture	16 May
DDT	3	G area - Surface material, white with a crystalline structure	16 May
DDT	4	G area - (Hole #1) Surface material, white with granular texture	17 May
Nothing	5	G area - (Hole #1) Soil sample 18" deep	17 May
DDT	6	G area (Hole #2) Surface material white with granular texture	17 May



G area

PREDOMINATE WIND FROM SOUTH

Figure 5



NWIRP McGREGOR

--- DRAINAGE

Figure 6

Sample No.		Description	Date Collected
.2 ppm	7	G area (Hole #2) Soil sample 24" deep	17 May
3.9 ppm	8	G area (Hole #2) Soil sample 42" deep	17 May
DDT	9	G area (Hole #3) Surface material, white with granular texture	17 May
1.9 ppm	10	G area (Hole #3) Soil sample 24" deep	17 May
Nothing	11	Mud sample from cattle tank approximately 3/4 mile below G area	17 May
Nothing	12	Mud sample from Harris Creek, which drains central part of facility (outside G area watershed) at boundary railroad tressel	17 May
Nothing	13	Composite dust and dirt sample collected inside building 705	17 May
Nothing	14	Wall scrappings from inside building 705, brown substance apparently splashed on the walls many years ago	17 May
Nothing	15	Soil sample in dry drainage ditch at calvert under dirt road in S area	16 May
Nothing	16	Water sample in creek at dirt road bridge north of the burn site in S area	16 May
Nothing	17	Mud sample from pond across road (north) from M area	16 May

Samples 1, 2 and 3 were analyzed for suspected substances based upon visual observation; toxaphene, sulfur, and DDT respectively. Samples 4 through 17 were scanned for the presence of any pesticides in general. Samples 4 through 10 were reviewed specifically for the presence of aldrin-dieldrin, chlordane-heptachlor, BHC-lindane, toxaphene, DDT and endrin.

The following analytical results were obtained:

Sample No. 1 - Toxaphene (high grade - pure)
2 - Sulfur (high grade - 98% plus 2% DDT)
3 - DDT (pure crystallized)
4 - DDT (high grade)
5 - No pesticides
6 - DDT (high grade)
7 - DDT (0.200 ppm)
8 - DDT (3.900 ppm)
9 - DDT (high grade)
10 - No pesticides
11 - DDT (1.900 ppm)

Sample No. 12 - No pesticides
13 - No pesticides (primarily calcium carbonate)
14 - No pesticides (natural resin)
15 - No pesticides
16 - No pesticides
17 - No pesticides

Based on the analytical results obtained from the first group of analysis, it was concluded that other than the isolated surface deposits of pure grade pesticides the only contaminant still present after the 25 or so years since the close of the Geigy operations is DDT. These conclusions prompted the second soil sampling visit of 9 January 1979.

On 9 January 1979, a total of eleven soil samples were collected (see Figures 5 and 6). Seven samples (Nos. 18-24) were collected in and around G area. Samples No. 25 and 26 were collected in separate depression areas of the drainage ditch connecting G area and the cattle tank from which sample No. 11 was collected. Samples No. 27 and 28 were collected off NWIRP property in the drainage creek that receives runoff from G area below the cattle tank. These eleven samples were analyzed by NOS, Indian Head, MD, for DDT concentrations.

Sample No.	Results DDT (ppm)	Description
18	.050	G area, soil sample south side of building 705, 3 inches below grade
19	.030	G area, soil sample west side of building 705, 3 inches below grade
20	1.300	G area, soil sample west side of building 705, 3 inches below grade
21	0.200	G area, soil sample north side of building 705, 3 inches below grade
22	0.050	G area, soil sample north side of building 705, 3 inches below grade
23	0.550	G area, soil sample south side of building 705, 3 inches below grade
24	0.100	Just across fence from G area deposit site soil sample 3 inches below grade
25	0.500	G area, surface soil sample north side of building 705 in drainage ditch as it exits the G area at fence line
26	0.050	Surface soil sample in G area drainage ditch next to road leading to H area

Sample No.	Results DDT (ppm)	Description
27	0.015	Mud sample from G area drainage ditch where it exits NWIRP at railroad tressel
28	0.001	Mud sample from G area drainage ditch where it passes under Highway 84, approximately one-half mile below NWIRP boundary

CONCLUSIONS

The disposal site in G area is contaminated with isolated surface deposits of high grade chemicals, of which most are pesticides. These chemicals present a health hazard and should be removed, as should the soil in the immediate vicinity of these deposits. The cattle tank down stream from G area should be filled as its 1.9 ppm DDT presents a potential health problem to livestock using it.

The presence of DDT in the vicinity of the heavy deposits is not unexpected due to its long persistence and its insolubility in water. The exposure level at which DDT concentrations present a direct health hazard to persons working in the area has not been firmly established. Water Quality Criteria 1972, by the National Academy of Sciences, established a calculated maximum safe level from all sources of exposure for DDT for humans at 0.05 mg/kg/day. These limits reflect the amount the National Academy recommends can be ingested without harm to the health of the consumer. It is further pointed out that this limit is meant to serve only in the event that these chemicals (DDT) are inadvertently present and do not imply that their deliberate addition is acceptable. This reference, which is the current reference being used by the Environmental Protection Agency (EPA) for pesticide criteria, does acknowledge that there are conflicting studies relative to the carcinogenic effect of DDT. It is the level of exposure that is in question, not the acknowledged harmful effects. Because of the adverse physiological effects of DDT on humans and because of the inadequate information on the exposure limits, it is recommended that the surface area soil around the concentrated material also be cleaned up.

The residual amounts (approximately 1 ppm or less) of DDT throughout the entire G area and in the cattle tank may not be totally attributable to the Geigy operations, it could, at least partially, be the result of agricultural pesticide application over the years. In any event, these low levels in the soil should not present a health hazard, however, the almost 2 ppm DDT in the cattle tank could present a problem. When the livestock walk in the pond the fine DDT particles become suspended in the water and may be ingested as the livestock drink the water.

The other areas of NWIRP under review (excluding G area) did not exhibit any outward appearances of contamination. Based upon visual observations and conversations with NWIRP personnel there was no evidence to support contamination of these areas. However, due to the highly technical and selective nature of ordnance operations, the Ordnance Environmental Support Office (OESO), Naval Ordnance Station, Indian Head, MD, has been

requested to include NWIRP McGregor, Texas, in their list of activities for comprehensive environmental surveys. An OESO survey is planned for NWIRP McGregor in June 1979.

Relative to these other areas, the following land use observations should be considered:

1. The existence of a solid waste disposal site, such as the one in parcel 3, field 3, is not unusual for an industrial complex such as NWIRP. Cleaning up this type of area for other land use would probably be economically unjustifiable;

2. The burn site within S area would exclude other land use by the nature of its operations, and runoff from the site does not present a health hazard to the surrounding area;

3. The parcel 4, field 3, that contains the Imhoff Tank and waste stabilization ponds (evaporation ponds) should remain as is with a small buffer zone from other land areas.

RECOMMENDATIONS

The surface deposits of high grade chemicals present a health hazard and should be removed. Until this is accomplished, and as agreed upon during the outbriefing of the January visit with Messrs. Harley Kamm and Jim Wagnor, the area as it presently exists, should be designated as a "minimum access area". This being an area where access is restricted to only direct job related personnel and then only for non-continuous duration, particular emphasis should be made to eliminate/restrict exposure to the actual disposal site itself.

The deposits of high grade chemicals (probably no more than one or two cubic feet) should be eliminated by packaging and landfill. The high grade material should be placed in a metal drum, properly labeled as containing pesticides, and sent to a Class A landfill for burial. It is doubtful that the City of McGregor would accept this material in their landfill. If a closer suitable landfill cannot be found, Texas Ecologist, Inc., Robstown, Texas, (512) 387-3518, has accepted this type of material for landfilling in the past for a nominal fee (less than $20/barrel).

How does this give w/p.5?

The surface soil in the immediate vicinity of the concentrated surface deposits should be removed. It is recommended that the material be buried on site. A four to six foot trench could be dug along the west fence of G area for this purpose. The soil, approximately six to eight inches deep and three to four feet away from the surface deposits, should be scrapped up, placed in the trench and covered with at least four feet of cover. The cattle tank should be filled and abandoned and the storm drainage path from the G area rerouted around it. A new tank could be dug out in the near vicinity if local operations so require.

Bury DDT, closer to G.W. Table?

The entire Geigy Chemical Company disposal site, on both sides of the G area perimeter road should be cleaned of debris such as the broken glass, paper, barrels, etc. This material could be taken to the City of McGregor landfill.

Any soil put over site?

As a final precautionary measure, it is recommended that the entire disposal site be plowed and seeded with a grass cover. This will result in at least several inches of cover over any unnoticed area of contamination.

To accomplish this the area should be plowed using a disc a minimum of 4 inches deep. Next the soil should be harrowed to provide a smooth seedbed, then fertilized with 10-20-10 at a rate of 300 lbs per acre evenly spread over the entire area and seeded with Kline grass at a rate of 2.5 pounds per acre. These practices should be applied and completed within 10 days following completion of chemical clean-up.

With the implementation of the above recommendations the G area should be available for agricultural outleasing.

'81.

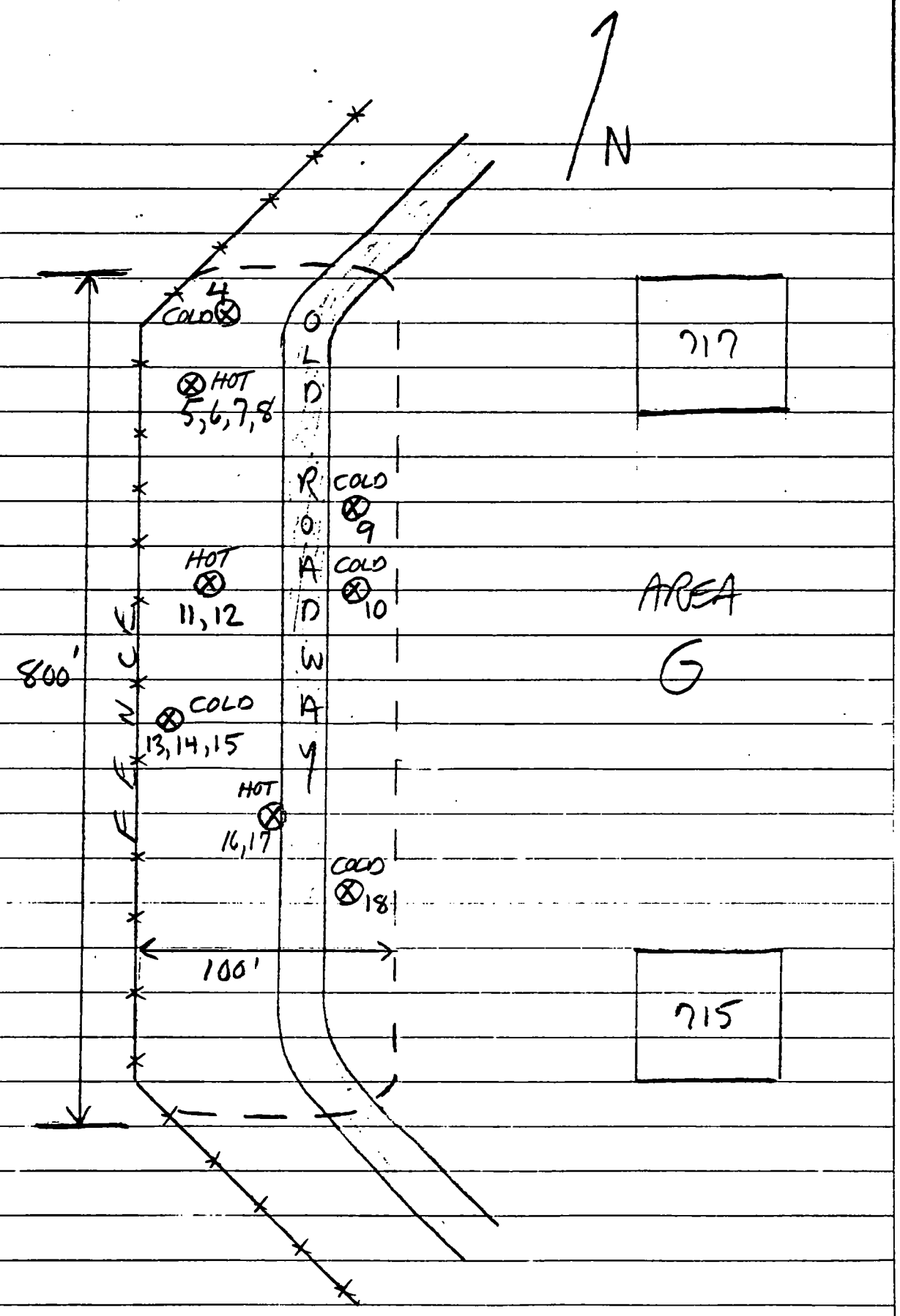
PART II

EE I onsite in Aug

SEPTEMBER 1982

SOUTHNAVFACENGCOM SURVEY

Fifteen soil samples from the pesticide dump site in Area G were taken in September 1982. Locations are identified on the next page, Soil Sampling Location Map - Part II. The laboratory analysis of these samples are contained on the following pages of this part of the appendix.



SOIL SAMPLING LOCATION MAP - PART II

ENVIRONMENTAL SCIENCE CORPORATION

P.O. BOX 616
NUT STREET • MIDDLETOWN, CONN. 06457
TELEPHONE: 347-6961

Laboratory Report

LAB. REPORT NO. C-0986

State Certification No. PH-0476

CLIENT

Mr. Laurens M. Pitts
Commanding Officer

DATE: October 1, 1982

CLIENT PHONE NO.

SPECIAL INSTRUCTIONS:

SAMPLE DESCRIPTION	TEST	RESULTS		
	COLD SURFACE #4G ppm	HOT SURFACE #5G* ppm	HOT 6" #6G ppm	HOT 12" #7G ppm
DDT	<0.050	<0.050	<0.050	<0.050
Toxaphene	<0.10	**	<0.10	<0.10
Aldrin/Dieldrin	<0.010/<0.010	<0.010/571	<0.010/8.1	<0.010/0.76
BHC mix	0.177	190	4.1	4.1
Endrin	<0.010	<0.010	<0.010	<0.010
Heptachlor	1.7	<0.020	<0.020	<0.020
	GRASS - HOT #8G ppm	SURFACE - COLD #9G ppm	SURFACE - COLD #10G ppm	SURFACE - HOT #11G ppm
DDT	<0.050	<0.050	<0.050	<0.050
Toxaphene	<0.10	<0.10	<0.10	32,000
Aldrin/Dieldrin	<0.010/1.5	<0.010/18	<0.010/0.5	<0.010/<0.0
BHC mix	2.8	<0.010	1.1	1200
Endrin	<0.010	<0.010	<0.010	<0.010
Heptachlor	1.3	<0.020	<0.020	<0.020

REMARKS:

*Interferences present after clean up.

11

December 21, 1982
DATE REPORTED

LABORATORY DIRECTOR

ENVIRONMENTAL SCIENCE CORPORATION
P.O. BOX 616
'UT STREET • MIDDLETOWN, CONN. 06457
TELEPHONE: 347-6961

Laboratory Report

LAB. REPORT NO. C-0986

State Certification No. PH-0476

CLIENT Mr. Laurens M. Pitts
Commanding Officer

DATE October 1, 1982

CLIENT PHONE NO.

SPECIAL INSTRUCTIONS:

SAMPLE DESCRIPTION	TEST	RESULTS		
	HOT - 6"	COLD SURFACE	COLD - 6"	COLD - 12"
	#12 G* ppm	#13 G ppm	#14 G ppm	#15 G ppm
DDT	<0.050	467	67	<0.050
Toxaphene	**	**	<0.10	<0.10
Aldrin	<0.010	<0.010	<0.010	<0.010
Dieldrin	6.7	<0.010	<0.010	<0.010
BHC mix	14	11	1.2	<0.010
Endrin	<0.010	<0.010	<0.010	<0.010
Heplachlor	<0.020	<0.020	<0.020	<0.020
	SURFACE - HOT	6" - HOT	SURFACE - COLD	
	#16 G ppm	#17 G ppm	#18 G ppm	
DDT	<0.050	<0.050	<0.050	
Toxaphene	<0.010	**	<0.010	
Aldrin	<0.010	<0.010	<0.010	
Dieldrin	<0.010	825	2.1	
BHC mix	3000	11,100	4.4	
Endrin	<0.010	<0.010	<0.010	
Heplachlor	<0.020	<0.020	<0.020	

REMARKS:

*Interferences present after clean up.
**Present: Toxaphene fingerprint obscured by other pesticide peaks - unable to quantitate. DDT values include O,P DDT and P,P DDT.

12

December 21, 1982
DATE REPORTED

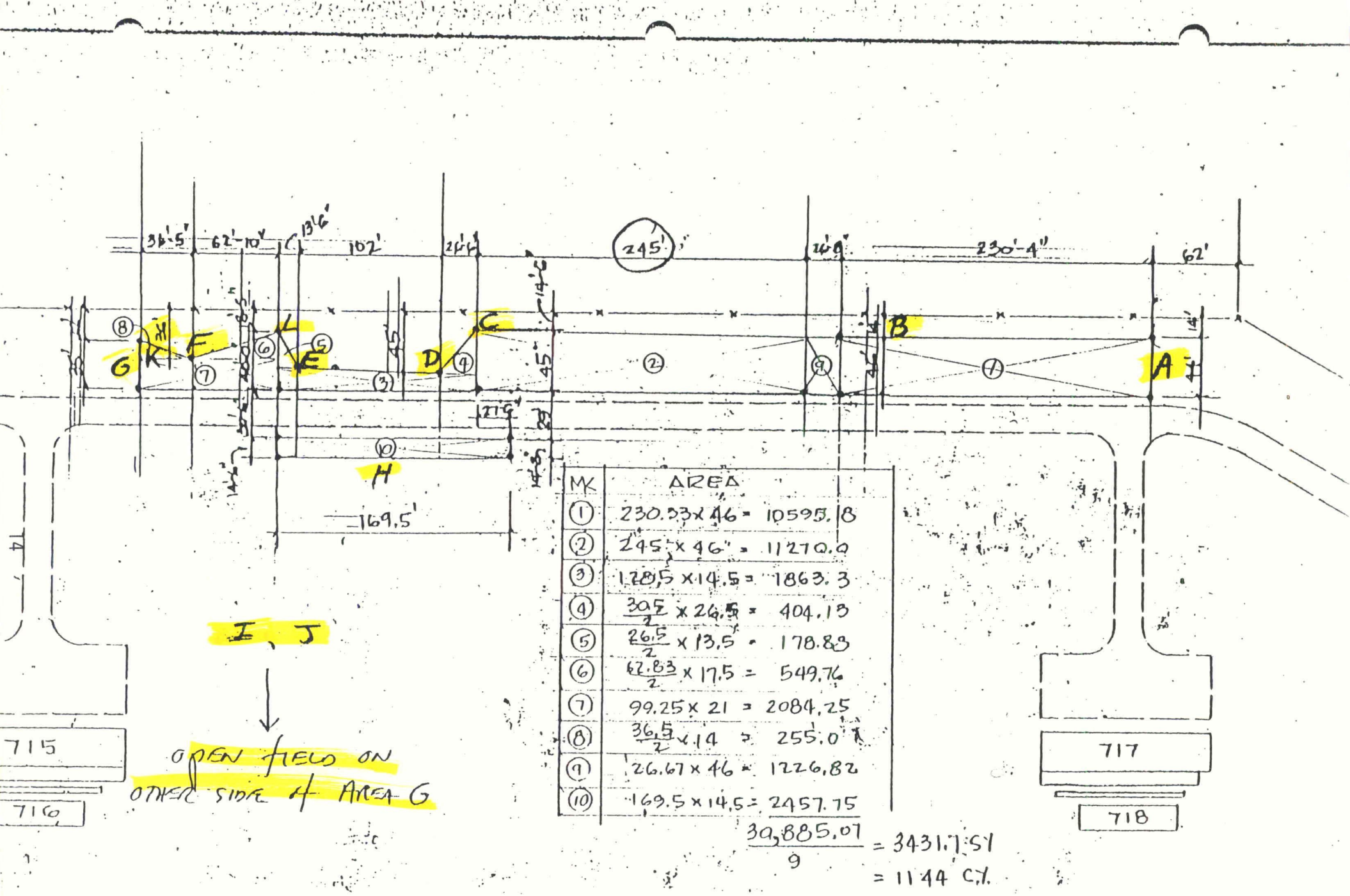
John M. Ozalo
LABORATORY DIRECTOR

PART III

JUNE 1983

SOUTHNAVFACENGCOM SURVEY

Ten additional soil samples from the pesticide dump site in Area G and two background samples from the field 300 yards due east were taken in June 1983. Locations are identified on the next page, Soil Sampling Location Map - Part III. The laboratory anslysis of these samples are contained in the following pages of this part of the appendix.



MK	AREA
①	230.33 × 46 = 10595.18
②	245 × 46 = 11270.0
③	128.5 × 14.5 = 1863.3
④	$\frac{30.5}{2}$ × 26.5 = 404.13
⑤	$\frac{26.5}{2}$ × 13.5 = 178.88
⑥	$\frac{62.83}{2}$ × 17.5 = 549.76
⑦	99.25 × 21 = 2084.25
⑧	$\frac{36.5}{2}$ × 14 = 255.0
⑨	26.67 × 46 = 1226.82
⑩	169.5 × 14.5 = 2457.75

$\frac{30,885.07}{9}$ = 3431.7 S.Y.

= 1144 C.Y.

SOIL SAMPLING LOCATION MAP - PART III

ENVIRONMENTAL SCIENCE CORPORATION

P.O. BOX 616
50 WALNUT STREET • MIDDLETOWN, CONN. 06457
TELEPHONE: 347-6961

Laboratory Report

LAB. REPORT NO. C-779

State Certification No. PH-0476

CLIENT

Mr. Laurens M. Pitts
Commanding Officer
Southern Division
Naval Facilities Engr. Com.
Code 114 2144 Melbourne Street
P.O. Box 10068
Charleston, South Carolina 29411

DATE July 5, 1983

CLIENT PHONE NO. (803)743-5510

SPECIAL INSTRUCTIONS:

Rush! Call Results to Mr. Dick Bozung 0050

SAMPLE DESCRIPTION		TEST	RESULTS		
			A COLD	B COLD	C COLD
DDT	ppm		1.5	30	20
Toxaphene	ppm		<0.10	<0.10	<0.10
Aldrin/Dieldrin	ppm		<0.05/<0.05	<0.05/<0.05	<0.05/<0.05
BHC Mix	ppm		2.2	29	25
Endrin	ppm		<0.05	<0.05	<0.05
Heptachlor	ppm		<0.05	<0.05	<0.05
			D COLD	E COLD	F COLD
DDT	ppm		18	500	25
Toxaphene	ppm		<0.10	<0.10	<0.10
Aldrin/Dieldrin	ppm		<0.05/<0.05	<0.05/<0.05	<0.05/<0.05
BHC Mix	ppm		31	1,000	<0.10
Endrin	ppm		<0.05	<0.05	<0.05
Heptachlor	ppm		<0.05	<0.05	<0.05
			G COLD	H COLD	I BACKGROUND
DDT	ppm		26	10	0.15
Toxaphene	ppm		<0.10	<0.10	<0.10
Aldrin/Dieldrin	ppm		<0.50/<0.50	<0.50/<0.50	<0.05/<0.05
BHC Mix	ppm		50	6.4	<0.05
Endrin	ppm		<0.50	<0.50	<0.05
Heptachlor	ppm		<0.50	<0.50	<0.05

REMARKS:

July 18, 1983
DATE REPORTED

LABORATORY DIRECTOR

ENVIRONMENTAL
SCIENCE
CORPORATION

P.O. BOX 616
50 WALNUT STREET • MIDDLETOWN, CONN. 06457
TELEPHONE: 347-6961

Laboratory Report

LAB. REPORT NO.
C-779

State Certification No. PH-0476

CLIENT
Mr. Laurens M. Pitts
Commanding Officer

DATE July 5, 1983

CLIENT PHONE NO.

SPECIAL INSTRUCTIONS:

0050

SAMPLE DESCRIPTION	TEST	RESULTS

Continued:

		J BACKGROUND	K HOT	L HOT
DDT	ppm	0.054	<0.50	4000
Toxaphene	ppm	<0.10	145,000	<0.10
Aldrin/Dieldrin	ppm	<0.50/<0.50	<0.05/<0.05	<0.05/<0.0
BHC Mix	ppm	<0.50	46,800	<0.05
Endrin	ppm	<0.50	<0.05	<0.05
Heptachlor	ppm	<0.50	<0.05	<0.05

REMARKS:

July 18, 1983
DATE REPORTED

John M. Drake
LABORATORY DIRECTOR

APPENDIX C

WATER ANALYSIS FROM STOCK POND NORTH OF AREA M

(SITE 9)

CENTRAL TEXAS ANALYTICAL
QUALITY CONTROL ENGINEERS
8283 BOSQUE BLVD.
WACO, TEXAS 76710

CHARLES G. SCHANK, CH.E., P.E. · OFFICE (817) 772-5549
HOME (817) 772-5455

GERARD N. SCHANK, GEOL.

STOCK POND NORTH of AREA M.

November 25, 1981

Mr. George Cobb
Hercules Inc.
P.O. Box 548
McGregor, Texas 76657

Dear Mr. Cobb,

The samples received and tested during the month of November 1981 and reported to you by telephone are as follows:

#81-322-1	Chromium	0.68 ppm
	Trichloroethylene	Not detected
#81-322-2	Silver	3.66 ppm

Very truly yours,

Gerard N. Schank
Gerard N. Schank

APPENDIX D

WW II AERIAL PHOTOGRAPHS OF AREAS J, K, L

AND

1952 PHOTOS OF AREA J

(SITE 7)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL PHOTOGRAPHIC
INTERPRETATION CENTER
P.O. 1587
VINT HILL FARM STATION
WARRENTON, VIRGINIA 22186

December 2, 1982

Commanding Officer
Attn: Dick Bozung
Code 114A
Southern Division
Naval Facilities Engineering Command
P.O. Box 1068
Charleston, SC, 29411

Dear Mr. Bozung:

Enclosed are prints of industrial areas J, K, and L at the NWIRP McGregor, Texas. The prints were made from film flown in February 1943 and January 1944. The prints cover the three areas requested except for a small portion at the southwest corner of area L. Also shown on the prints are several other industrial areas including D, E, F, and G. These areas were indicated on the maps you previously sent to us.

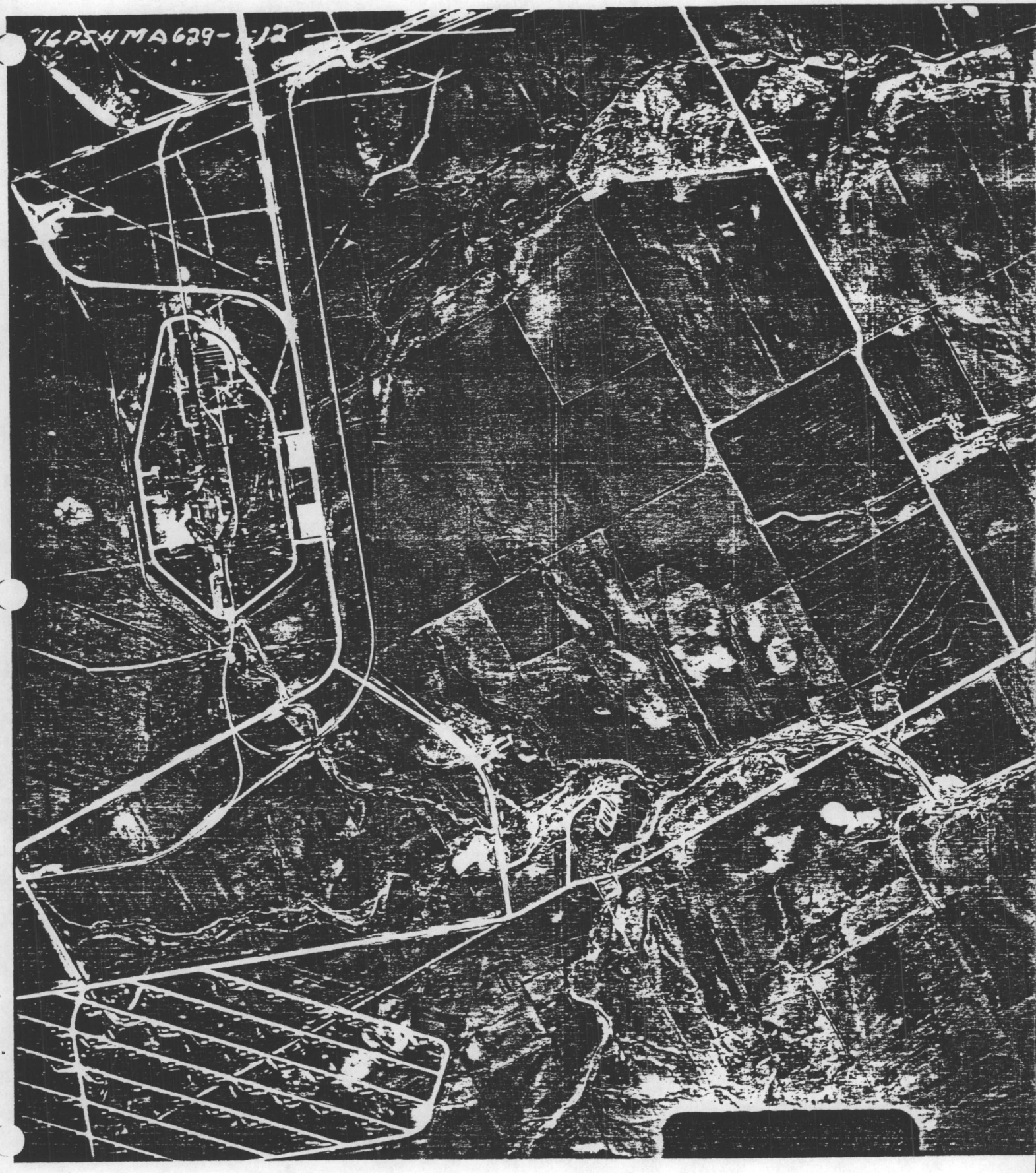
If we can be of further help to you in identifying any areas of interest, please contact us at FTS 703-557-3110.

Sincerely,

Frank R Wolfe
for

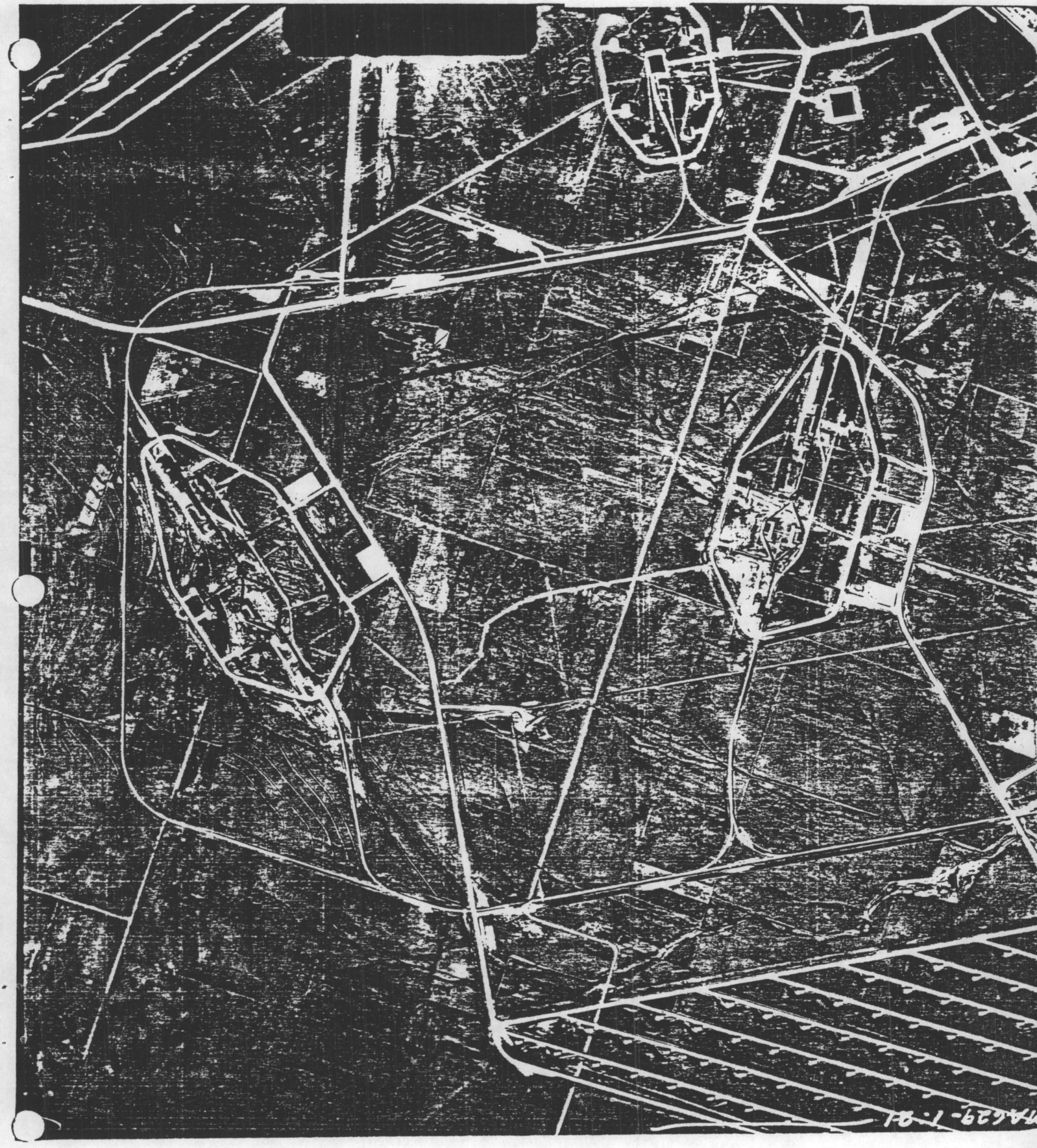
Vernard H. Webb
Chief, EPIC

1944



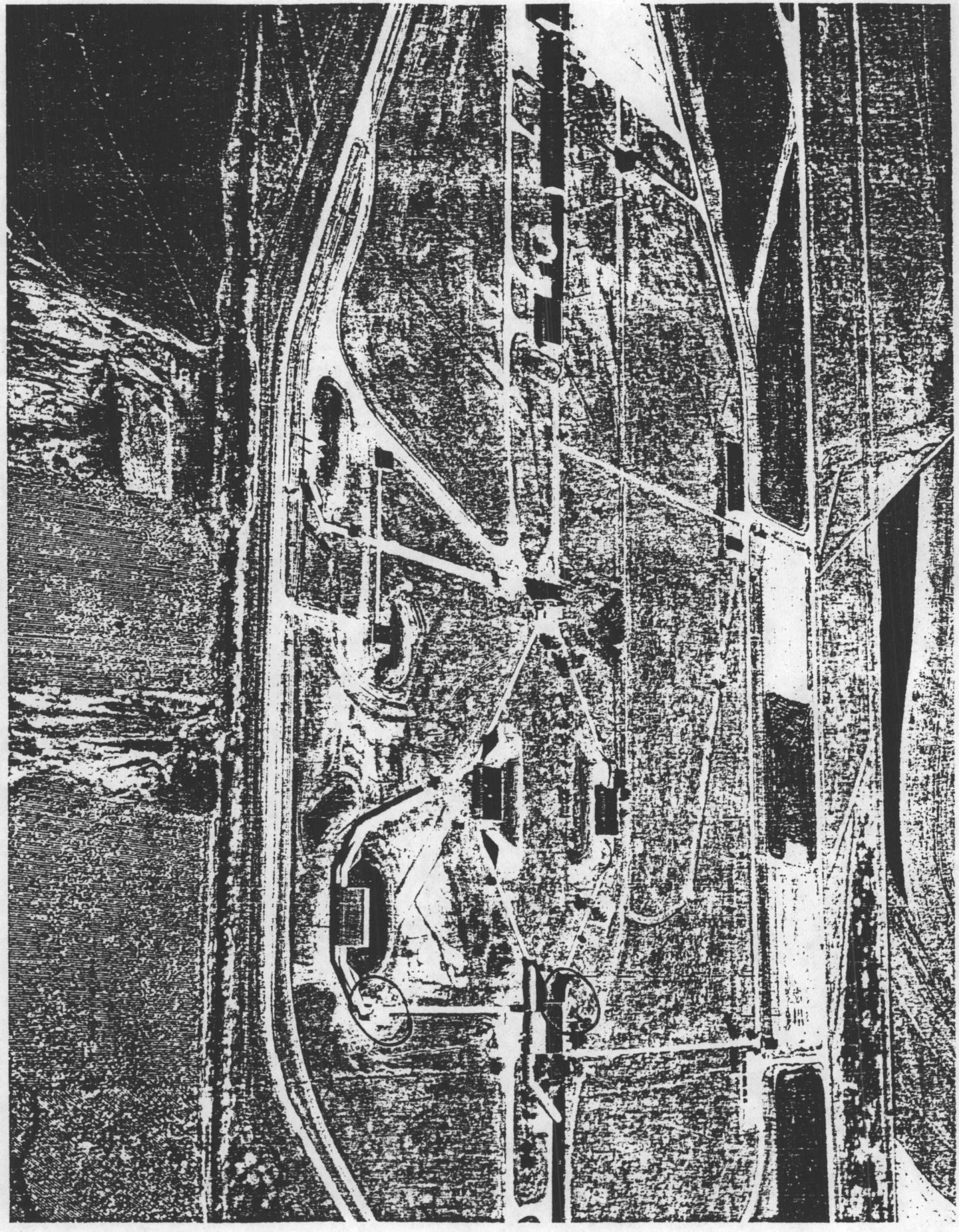
AREA J

1944



AREAS K AND L

1952



AREA J
4

APPENDIX E

WEST SETTLING PONDS AREA F

FINAL CLOSURE PLAN

(SITE 2)

1/17/83
TO: Mr. Ken Chacey, SOUTHNAVFACENGCOM

FROM: Ronald Eckelkamp, Shannon & Wilson, Inc., St. Louis, MO

Submitted herewith is a closure plan for three surface impoundments located west of Area F at the Naval Weapons Industrial Reserve Plant (NWIRP) near McGregor, Texas. This plan is in general agreement with the closure plan submitted by Hercules Inc. to Texas Department of Water Resources (TDWR) on October 25, 1982, but is developed herein in more detail. The initial closure request is given in Appendix A. Closure was authorized by Mr. Henry Davis, Executive Director of TDWR by correspondence of November 23, 1982, also included in Appendix A.

Introduction

Since the impoundments received waste water from process and washdown operations from the manufacture of triamino trinitro benzene (TATB), a Class A explosive, the waste sludge is considered a hazardous waste from a specific source under 40CFR Part 261.32. The waste has a K044 designation which is source specific because of potential reactivity.

The closure is being implemented in seven phases. The seven phases include:

I. Decontamination of flumes and removal and decontamination of impoundment piping;

II. Removal of impoundment waste water;

III. Removal and disposal of waste TATB;

IV. Sampling and remaining sediment waste, testing for reactivity, and preparation of a delisting petition;

V. Removing the sediment waste to temporary storage pending a decision on the delisting petition;

VI. Backfilling of the impoundments; and

VII. Disposal of the sediment based on the outcome of the delisting petition.

Phase I - Piping and Flume Decontamination

All flumes have been washed with water, so as to remove hazardous wastes which may have settled in the flumes.

The piping which interconnects the impoundments will be removed during Phase V operations. The piping will be decontaminated by washing and stored for future use.

Phase II - Waste Water Removal

Waste water within the ponds was analyzed for pH, COD, NH_3-N, and oil and grease content to determine if it met requirements of NPDES permit #TX008307. Since the testing indicated the water met permit requirements, it was removed to the extent possible by pumping and discharged to the adjacent drainage swale. The drainage was accomplished at a rate which did not exceed the permit specifications of 40,000 gallons per day or an average of 20,000 gallons per day. Waste water containing suspended solids was not discharged from the ponds.

Pumping removed most of the water except that which ponded in low areas or contained suspended solids. This remaining water plus water which accumulates in the impoundments because of rain will be removed during Phase III. At that time water from the north and south impoundments will be pumped to the middle impoundment since the middle impoundment will be treated last during Phase III work. The water in the middle impoundment will be discharged to the adjacent drainage swale if the water meets NPDES permit standards. Suspended solids, if any, will be removed by filtration. As an alternative, water may be pumped to a filtration system from each pond individually.

Phase III - TATB Waste Removal

The TATB waste will be removed and disposal accomplished by the facility contractor, Hercules Inc. Day-to-day activities and project safety will be the responsibility of Hercules Inc. Investigations by Hercules Inc. and Shannon and Wilson, Inc. indicate approximately 120 $yd.^3$ and 50 $yd.^3$ in the south and north impoundments, respectively. The middle impoundment appears to contain only trace amounts of TATB. A schematic diagram of the ponds and thicknesses of TATB are given on Plate 1.

Excavation - Excavation will be accomplished with a W-S Gradall, Model 660 or equivalent type unit. The excavated material will be hauled from the site by dump truck to the Area S burn pit where it will be burned as discussed in a subsequent section. A site plan showing Area F and Area S is given on Plate 2.

Excavation will be accomplished to the extent possible from the banks of the impoundments. Impoundment berms may be lowered in order to accommodate construction equipment and/or improve the reach distance of the Gradall. The berms will not be lowered to closer than within six inches of the former water line. Surface runoff into the ponds will be prevented.

Similarily, to facilitate removal, a small roadway may be extended into the impoundment. Prior to road construction, however, TATB and bottom sediment would be removed. The TATB would be disposed in Area S and the bottom sediment stockpiled in the pond or temporarily stored in Area H as discussed in Phase V. Disturbances to sediment during TATB removal will be minimal.

Spillage and contamination during the removal process are not anticipated. The bed of the dump trucks and the ground within the swing path of the Gradall will be protected by polyethylene sheeting. The exterior of the trucks will be washed prior to leaving the impoundments or Area A burn pit if exterior contamination occurs.

The depth of TATB removal will be controlled by sludge color; TATB is characteristically yellow. After the yellow sludge is removed from an area, random samples will be obtained and ignition and impact sensitivity testing accomplished. Previous testing of TATB sludge had a positive response to ignition testing and generally a positive response to impact sensitivity testing at less than 119 inch-pounds. Sludge will be removed until flame and impact sensitivity test samples do not respond positively, but in no instance before all yellow sludge is removed.

Sludge removal is expected to commence by January 25, 1983 and should be completed within about three weeks.

Disposal - The TATB sludge will be end dumped on the west side of the Area S burn pit. Deposit height will be limited to that which is incidental to the angle of repose of the material. The sludge will be burned periodically. The time interval and quantity will be determined by a trial process. The sludge may be burned in a pile or may be spread and allowed to air-dry. The actual process will depend on results of trial burns. If necessary, the sludge may be mixed with a petroleum product, such as Number 2 fuel oil, to initiate and/or sustain burning. The Texas Air Board will be contacted prior to burning.

Area S is listed as an open-berm area for propellant and organic processing material in the Texas Department of Water Resources Permit Application for Industrial Solid Waste Storage/Processing Disposal Facility, Part A - Facility Background Imformation submitted to TDWR by Hercules Inc. The facility has EPA, TSD Facility Number TXD000453399 and TDWR generator registration Number 30056.

Post-Removal Cleanup - At the conclusion of TATB sludge removal, the Gradall bucket and dump truck will be washed with water within the Area S burn pit. The bucket and dump truck bed will be flame tested prior to removal from NWIRP.

Phase IV - Delisting Petition

After removal of the TATB, the remaining sediment in the ponds is presumably that which was deposited prior to start of TATB pilot production in 1979. Sediment was deposited by roof runoff and washdown water. The washdown water occasionally contained ammonium perchlorate and ammonium nitrate. The sediment is believed to be nonreactive. Therefore, a delisting petition will be prepared for submittal to U.S.E.P.A. Since testing, petition preparation, and petition review could take

six months or more, the sediment will be removed and placed in temporary storage as discussed in Phase V pending a petition ruling.

A sampling and analysis plan giving sampling techniques, sampling frequency, and testing methods is being developed and will be forwarded to TDWR for comments prior to initiating sampling. Sampling will be performed in general accordance with published EPA guidelines.[1] As a minimum, four samples from the impoundments will be tested. Testing will be accomplished in accordance with the requirements of 40CFR Part 260.20, 260.22, and 261.23. Explosivity testing will be performed by the U.S. Bureau of Mines; other tests will be performed by a private laboratory. The U.S. Bureau of Mines is under contract with U.S.E.P.A. to perform that agencies explosivity testing.

The Region III office of TDWR will be notified as to when sampling will occur so that a department representative can be present, if desired.

Phase V - Sediment Removal and Temporary Storage

The sediment will be removed and disposal accomplished by the facility contractor, Hercules Inc. Investigation by Hercules Inc. and Shannon & Wilson, Inc. indicate approximately 200 $yd.^3$ of sediment. Sediment thickness is generally about one to seven inches thick.

Excavation - Although the sediment is believed to be inert, it is the product of a waste water from an explosive manufacturing process and, therefore, will be handled as a hazardous waste during the removal process. Removal will be

---

[1] "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Published by the U.S. Environmental Protection Agency; Publication SW-846; 2nd Edition, 1982.

accomplished in the same manner as excavation for Phase III except that the sediment will be removed to temporary storage in Area H. Area H is located as shown on Plate 2.

As-built construction plans for the impoundments indicate that sand was placed in the bottom of the impoundments as shown on Plate 3. Testing by Shannon & Wilson, Inc. and Hercules Inc. confirmed the existence of sand below the sediment. The sediment will be removed until clean sand is encountered or at the option of Shannon & Wilson, Inc. deeper, if sampling and testing indicate contaminated soil.

Samples of the bottom material will be obtained and tested by Hercules Inc. A negative reaction for sample testing by ignition and impact sensitivity testing will be used as the criteria to conclude a sufficient amount of material has been removed and backfilling may proceed. Samples will also be tested by Gas chromatography to determine that the TATB is not present.

Disposal - The sediment will be temporarily deposited within an abandoned storage bunker in Area H. These bunkers are constructed as explosive magazines, but use was discontinued when bomb protection ceased after WW II. Some of these bunkers are presently in use by Hercules Inc., but for the most part are empty. A schematic of a typical bunker is given on Plate 4. Prior to placement of sediment, the bunker will be lined with 10-mil polyethylene and in place of the one with wooden walls, a berm constructed. Roofs of many of the bunkers have deteriorated and fallen. Therefore, a new roof will be constructed. Sediment will be end dumped into the bunker prior to construction of the roof.

Post-Removal Cleanup - At the conclusion of sediment removal, the Gradall bucket and dump truck will be cleaned similar to the procedures given in Phase III.

Phase IV - Backfilling

After it is determined that the sediment has been removed, backfilling will commence. On-site adjacent soils which are of the Denton Clay and San Seba Clay Soil Series, will be used for backfill. These soils typically have a clay content ranging between 35 and 60 percent and contain limestone gravel and cobbles. The backfill will be graded so as to slope downward to the northwest. The impoundment berms will be breached to allow rapid drainage. Runoff other than that which falls within the limits of the impoundment will be diverted. The backfill will be placed in thin lifts (6 to 8 inches) and the soil compacted with at least four passes of the tracks of a 995 end loader or equivalent. The groundwater monitoring wells will be filled with grout.

Phase VII - Permanent Sediment Disposal

The sediment will be disposed of permanently based on results of the delisting efforts; disposal will be determined at that time.

APPENDIX F

TEXAS DEPARTMENT OF WATER RESOURCES

CORRESPONDENCE CONCERNING THE

CLEANUP OF THE PESTICIDE AND ASBESTOS DUMP SITES

(SITES 5 AND 6)

TEXAS DEPARTMENT OF WATER RESOURCES
1700 N. Congress Avenue
Austin, Texas

TEXAS WATER DEVELOPMENT BOARD
Louis A. Beecherl, Jr., Chairman
George W. McCleskey, Vice Chairman
Glen E. Roney
W. O. Bankston
Lonnie A. "Bo" Pilgrim
Louie Welch

Charles E. Nemir
Executive Director

TEXAS WATER COMMISSION
Lee B. M. Biggart, Chairman
Felix McDonald
John D. Stover

December 15, 1982

Ms. Kathleen Anglin
Environmental and Industrial Hygiene
Aerospace Division
Hercules Incorporated
P. O. Box 548
McGregor, Texas 76657

Dear Ms. Anglin:

Re: Cleanup of the Abandoned Pesticide and Asbestos Sites,
Naval Weapons Reserve Plants, McGregor, Texas

The Department has received and reviewed the draft cleanup proposal for the above referenced disposal sites submitted November 19, 1982 by Mr. Dick Bozung with the Department of the Navy. In regard to these proposals, we offer the following comments:

Pesticide Site

1. Surface deposits of pesticide residues should be removed and disposed of at an approved disposal site.

2. Soils should be removed to a depth where pesticide concentrations are less than 1 ppm and disposed of at an approved site.

3. The site should be filled and graded to approximate original contours with clean compacted soil, and revegetated.

4. Although the levels of pesticide residues measured in the stock tank sediments are less than 5 ppm, we recommend that the stock tank downstream from the pesticide area be filled and drainage be rerouted around the fill to prevent any potential health problems to livestock.

5. Core sampling and/or ground water monitoring should be initiated to ascertain the extent of vertical migration.

Asbestos Site

The Department agrees with the proposed plan to secure the asbestos site with the exception that soils from the pesticide site (50 ppm) cannot be utilized.

We request that the company submit the final cleanup plan for review within 30 days upon receipt of this letter. If you have any questions or desire to meet with the Department before submittal of the plan, please contact Mr. Michael Dick at 512/475-5516.

Sincerely,

Robert G. Fleming, P.E.
Director
Enforcement and Field Operations Division

MGD:rn

cc: Texas Department of Water Resources District 3 Office

TEXAS DEPARTMENT OF WATER RESOURCES
1700 N. Congress Avenue
Austin, Texas

1143 Dick Bozung
1142

Activity has requested on-site assistance for clean-up. will be sending Dick down in conjunction with a PCB job at HAS Dallas around mid June.

May 17, 1983

Ms. Kathleen H. Anglin
Environmental and Industrial Hygiene
Aerospace Division
Hercules Incorporated
P. O. Box 548
McGregor, Texas 76657

Dear Ms. Anglin:

Re: Hercules Abandoned Pesticide and Asbestos Sites Cleanup

The Department has reviewed the cleanup plan for the above referenced sites submitted by you and Mr. Dick Bozung on April 19, 1983. We concur with the overall proposal, however, we would offer the following comment in regard to the pesticide site. Once the soils are removed and the residual contamination is <1 ppm, an inspection should be made to determine if soil cracking or other geological event has provided a route for possible ground water contamination. If, in fact, cracking has occurred, ground water assessment will be required.

It is our understanding that the actual cleanup will commence in the first quarter of the 1984 Fiscal Year. Once the cleanup has been completed, we request that you submit a report which should contain at least the following items:

1. A detailed summary of the cleanup.

2. Sample analyses verifying the cleanup.

3. Manifestations verifying proper disposal.

P. O. Box 13087 Capitol Station • Austin, Texas 78711 • Area Code 512/475-3187

If you have any questions, please contact Mr. Michael Dick at 512/475-5516.

Sincerely,

Robert G. Fleming, P. E.
Director
Enforcement and Field Operations Division

MGD:mtm

cc: Mr. Dick Bozung, Southern Division
Naval Facilities Engineering Command
Texas Department of Water Resources District 3 Office